

THE  
**RAILWAY GAZETTE**

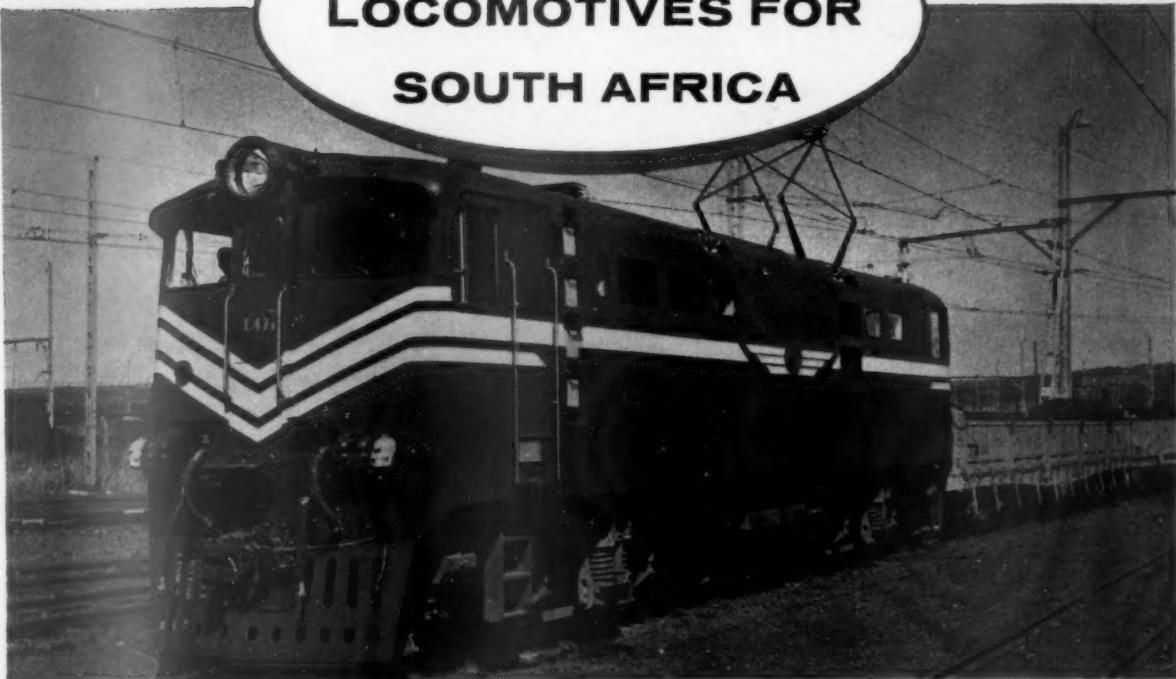
---

Price: Two Shillings

FRIDAY, OCTOBER 13, 1961

Annually £5 by post

**AEI 3000 volt  
LOCOMOTIVES FOR  
SOUTH AFRICA**



*One of the 135 AEI 3000 volt 2280 hp 84 ton D.C. electric locomotives, in service with South African Railways.*

No fewer than 345 electric locomotives have now been ordered from AEI by this customer together with 350 sets of motor coach equipment for the Reef and Cape Western electrifications.

*Enquiries to AEI Traction Division, Trafford Park,  
Manchester 17, or your local AEI Office.*

**AEI**

**Associated Electrical Industries Ltd.  
Traction Division  
MANCHESTER AND LONDON**

K/T 018 ch

# Cushymounts

Patented



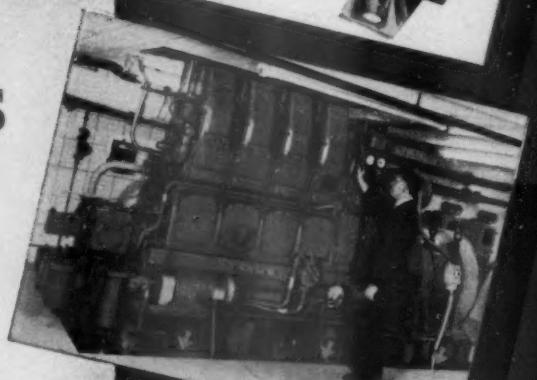
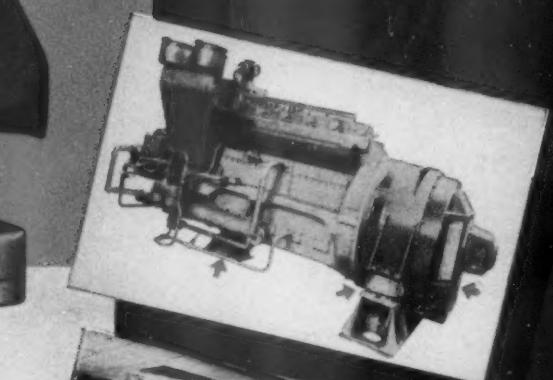
## LARGE DEFLECTIONS for Wide Range of Loads

Cushymounts, based on wide and intensive experience of vibration insulation, provide the large deflections essential for the successful isolation of low-frequency vibration from heavy machinery. A single Cushymount supports as much as five tons and can be adjusted to give any required deflection up to  $\frac{3}{4}$ " for loads of one to five tons.

### Integral Buffering

Cushymounts give the designer a complete mounting system. Despite their unusually high deflections no separate buffers or control links are needed, as movement in vertical and horizontal planes is limited to a predetermined amount by positive means incorporated in the mountings. Cushymounts are, therefore, ideally suited to diesel locomotive engines and large generators for use on ships.

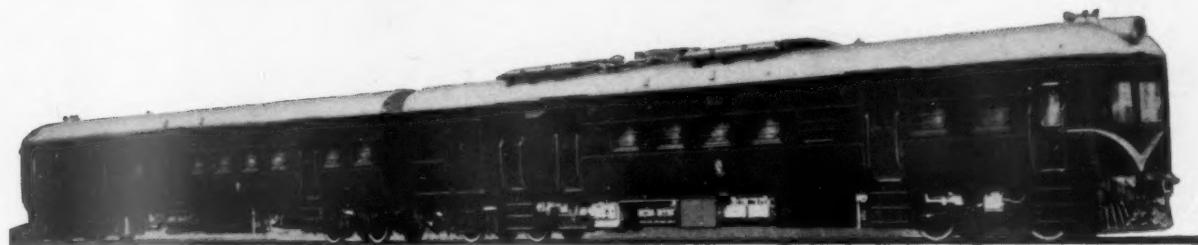
The illustrations on the right are: top, a Crossley generating set on three Cushymounts at the Dounreay Atomic Energy Establishment. Centre: 'English Electric' 4-cylinder diesel alternator on six Cushymounts and below: one of the three Cushymounts supporting the power unit on the Metropolitan-Vickers Bo-Bo locomotives for Eire.



# METALASTIK

METALASTIK LTD., LEICESTER

# DREWRY RAIL CARS

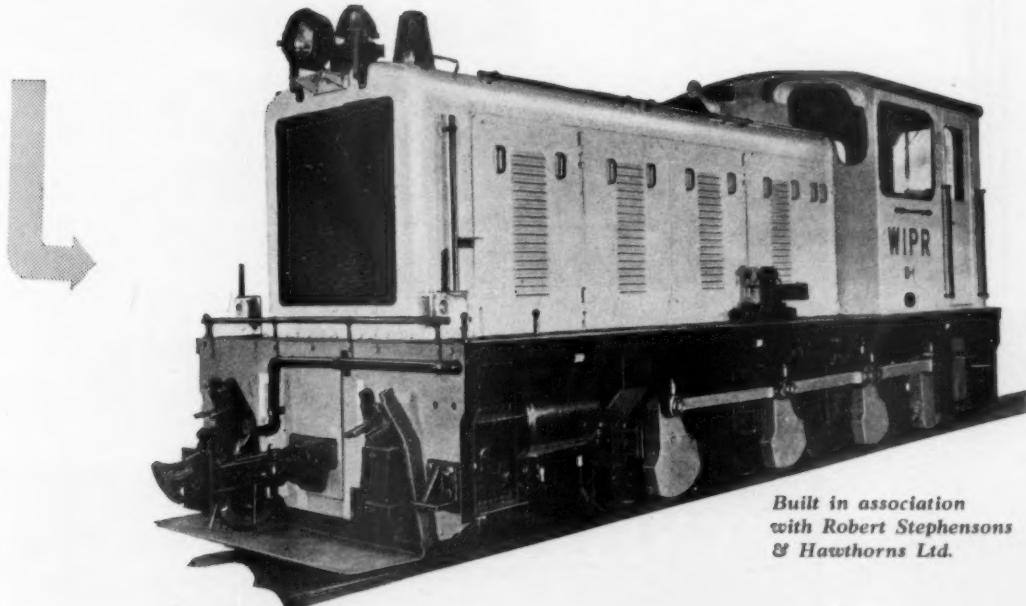


Built in association with  
The Birmingham Railway Carriage  
& Wagon Co. Ltd.

## WITH MECHANICAL OR HYDRO-MECHANICAL TRANSMISSION

The upper illustration shows one of two Twin Car Units shipped this year to the Nigerian Railway Corporation, equipped with twin underfloor engines totalling 400 h.p. and multiple-speed epicyclic transmission with automatic control. The lower illustration is one of a number of 30-ton metre gauge Drewry locomotives recently shipped to Portuguese India, for freight and passenger duties.

## AND LOCOMOTIVES

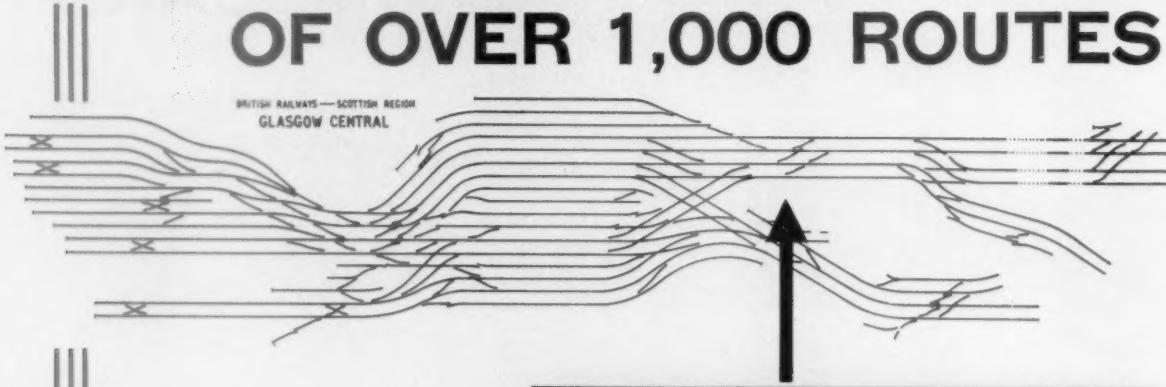


Built in association  
with Robert Stephensons  
& Hawthorns Ltd.

## THE DREWRY CAR COMPANY LTD.

CITY WALL HOUSE, FINSBURY PAVEMENT, LONDON, E.C.2  
TEL.: MONARCH 0671                    GRAMS: INNEAL, PHONE, LONDON

# THIS CONCENTRATED AREA OF OVER 1,000 ROUTES



OPERATED  
FROM ONE  
CONTROL  
DESK

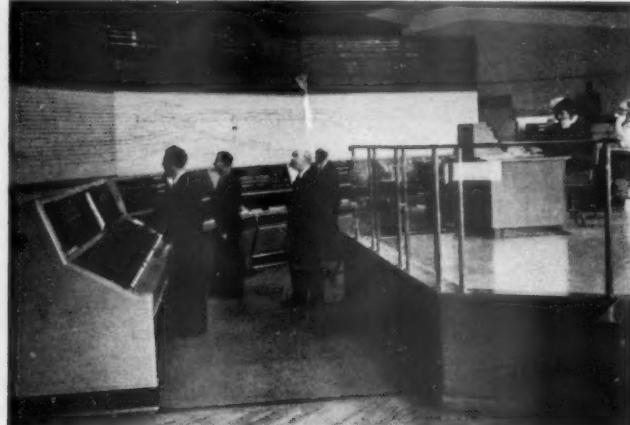


Photo by courtesy of Scottish Region, British Railways

Glasgow Central with over 1,000 routes is believed to be the largest route relay interlocking in the world, operated from one control desk. It controls all functions as far as Larkfield Junction on the Main lines and Cook Street on the Gourock lines, comprising in this concentrated area approximately 11 miles of track, involving 90 main colour light signals, 80 "Westlyte" shunt signals and 157 sets of electro-pneumatically operated points. There are 243 track circuits, and miniature type plug-in relays have been used extensively.

SUPPLIED AND  
INSTALLED BY



**SIGNALLING** for **RAILWAY**  
**MODERNISATION**

BRITISH DESIGN AND MANUFACTURE

**WESTINGHOUSE BRAKE AND SIGNAL CO. LTD., 82 York Way, King's Cross, London, N.1**

Saxby & Farmer (India) Private Ltd., Calcutta.

McKenzie & Holland (Australia) Pty., Ltd., Melbourne.

Westinghouse Brake & Signal Co., S.A. (Pty.) Ltd., Johannesburg.

Agents—Bellamy & Lambie, Johannesburg.

# Aberdare cables



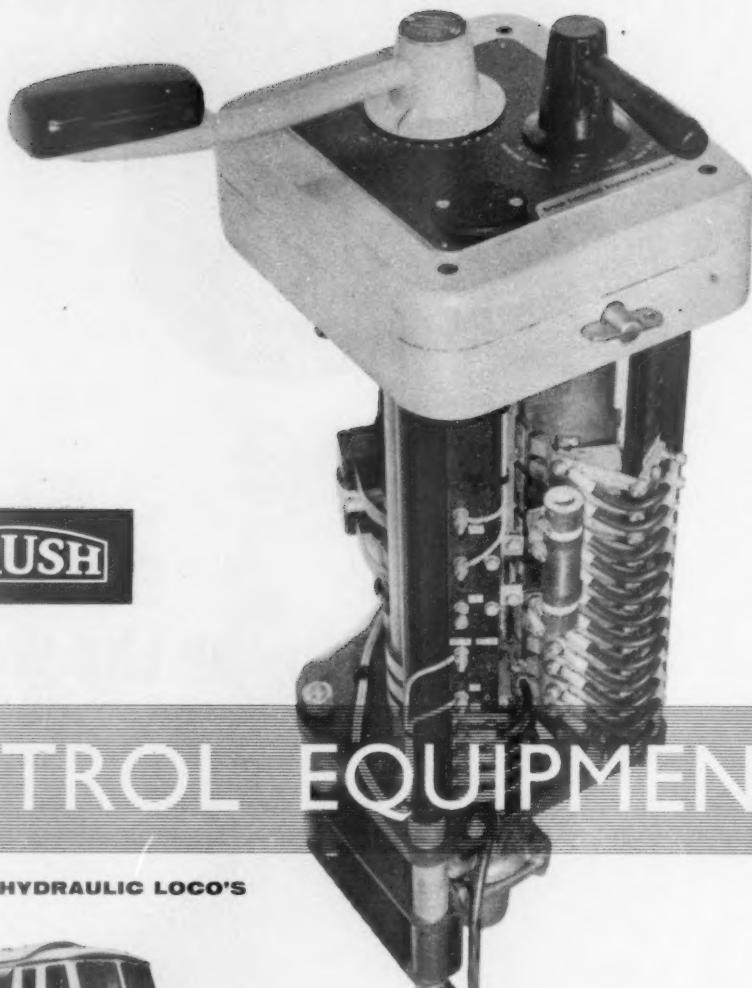
power the world over

ABERDARE CABLES LIMITED - ABERDARE GLAMORGAN  
London Office : 19, Woburn Place, London, W.C.1. Tel: TERminus 2777

Power for Ghana. Illustrated below are 22,000 yards of Mains Cable on their way by train to Ghana. Aberdare Cables have been supplied to countries all over the world.



AC 2



# CONTROL EQUIPMENT

FOR 95 DIESEL HYDRAULIC LOCO'S



The 95 new Type 31,700 h.p. Diesel Hydraulic Locomotives now being supplied by Beyer Peacock (Hymek) Ltd. for the Western Region of British Railways are being equipped with control equipment and dynostarters by Brush Electrical Engineering Co. Ltd.

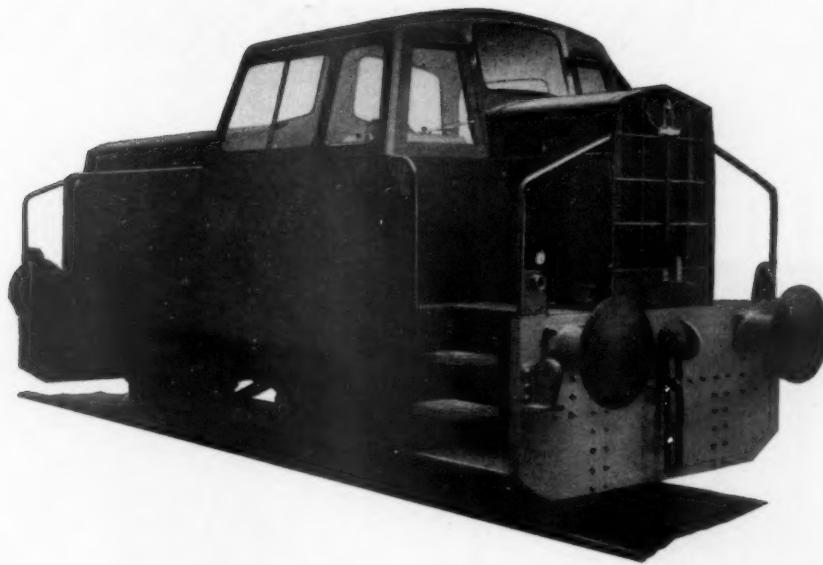
The major part of the control equipment is located in a compact cubicle at the rear of the driving cab, and is designed to ensure automatically the correct starting and engine running conditions. Principle feature of the driver's desk is the master controller with handles designed for maximum comfort and smart appearance.



**BRUSH ELECTRICAL ENGINEERING COMPANY LIMITED**

*A Member of Hawker Siddeley Industries*

Loughborough, England



## Sentinel chose Laycock-Knorr

### BRAKING EQUIPMENT

The new Sentinel 34 ton O-4-O Diesel Hydraulic Industrial Locomotives now going into service are all fitted with Laycock-Knorr compressed air brake equipment and pneumatic sanding gear.

This equipment, together with various other types of railway vehicle braking apparatus used extensively on the continent and developed by Knorr-Bremse of Munich over the last half century, is now manufactured and offered by



*View of cab interior showing dual driver controls.*



**Laycock**  
ENGINEERING LTD  
MILLHOUSES · SHEFFIELD 8

# THOUSANDS ARE SAFER WHEN PUBLIC TRANSPORT USES



## PETERS POWER-OPERATED DOORS

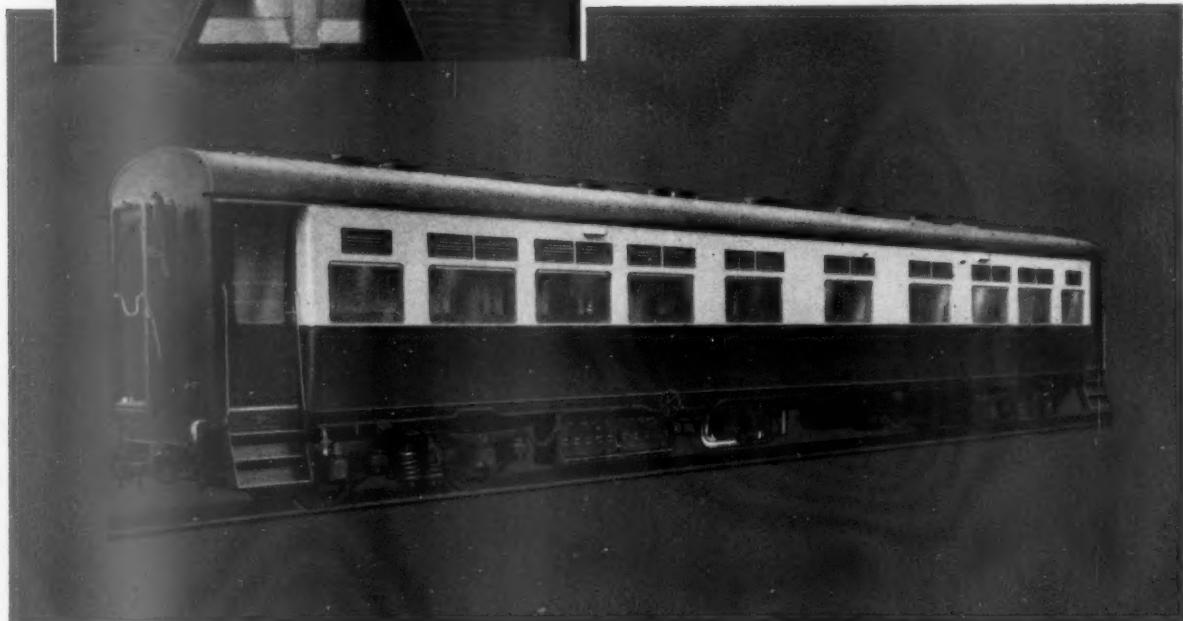
*For Transport and Industrial applications*

G. D. PETERS & CO. (ENGINEERING) LIMITED, SLOUGH, BUCKS., ENGLAND

(A member of the G. D. Peters Group)

Telephone: Slough 23201 (6 lines) Telegrams: Peters Slough.

# Sleeping Cars for EAST AFRICA by



One of the second class sleeping cars recently completed for East African Railways and Harbours. Each car accommodates 33 passengers in 6-berth and 3-berth compartments.

**METROPOLITAN-CAMMELL CARRIAGE & WAGON CO. LTD.**

HEAD OFFICE: SALTLEY • BIRMINGHAM 8

LONDON OFFICE: VICKERS HOUSE • BROADWAY • WESTMINSTER S.W.1

# THE MILLS RAIL PATENT AND BASEPLATE

Whenever a Mills Clip  
is fitted, it is fitted  
correctly.



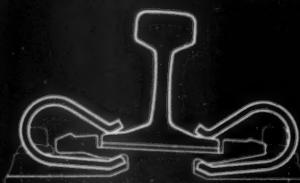
Photograph by  
Courtesy of British Railways



**EXORS OF JAMES MILLS LTD**  
**BREDBURY STEEL WORKS**

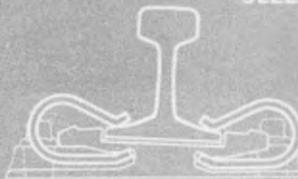
# CLIP

FOR WOOD SLEEPERS



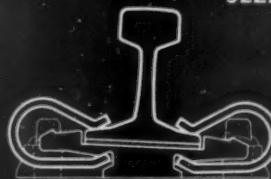
Four-hole baseplate  
with or without  
rubber rail pad.

FOR 'E' TYPE CONCRETE SLEEPERS



Two-hole baseplate,  
interchangeable with  
CSI Bullhead Chair.

FOR 'F' TYPE CONCRETE SLEEPERS



Small Area  
two-hole baseplate  
for main line use.

Every Mills Clip fitted applies  
a uniform load to the rail  
within a known range.

Very suitable for long welded  
rails and all heavy duty track

**WOODLEY • NEAR STOCKPORT**

Telephone: WOODley 2231 (7 lines) 3431 (7 lines) Cables: Mills Woodley



## *Maybach diesels power the new Hymek locomotives*

Bristol Siddeley Maybach\* diesel engines have been chosen for the new Hymek diesel-hydraulic locomotives. 95 of these Type 3 locomotives have been ordered for main-line use on British Railways Western Region. This now brings the total order placed with Bristol Siddeley for British Railways to 286.

### **DESIGNED FOR ECONOMIC OPERATION**

Bristol Siddeley Maybach rail traction diesel engines range from 384 to 2,000 hp and embody design features which produce more efficient operation in terms of lower wear, greater reliability and easier servicing.

The immensely strong, roller bearing disc-webbed crankshaft, for example, is extremely rigid in its tunnel housing.



**Disc-webbed, roller bearing crankshaft and tunnel housing**

This results in very low main and big-end bearing wear. The pressure-oil cooling of the pistons gives effective heat dissipation which reduces liner and gas ring wear to a minimum.

Since the majority of components are identical in all models, spares stocks can be cut and servicing is simplified through interchangeability.



*Maybach diesel engine being installed in D800 Class at Swindon.*

### **WORLD-WIDE SERVICE**

Maybach engines are in service all over the world, and have built for themselves an unsurpassed reputation as the most efficient diesel engines of today. This reputation, backed by the efficient Bristol Siddeley after-sales and spares service, offers the most satisfactory solution to all rail traction requirements.

For further information, please write to: Power Sales Manager, Power Division, Bristol Siddeley Engines Limited, PO Box 17, Coventry, England. Cables: Brisidair, Coventry.

\*Manufactured in the UK under exclusive licence from Maybach-Motorenbau GmbH.

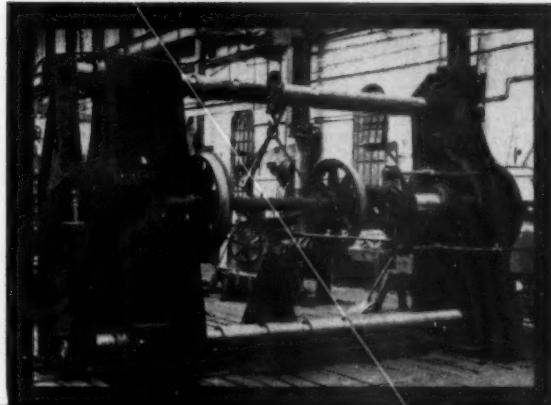
**BRISTOL SIDDELEY ENGINES LIMITED**

TURBOJETS - TURBOFANS - TURBOPROPS - RAMJETS - ROCKET ENGINES  
MARINE AND INDUSTRIAL GAS TURBINES - MARINE, RAIL AND INDUSTRIAL  
DIESEL ENGINES - PISTON ENGINES - PRECISION ENGINEERING PRODUCTS

I F . . .

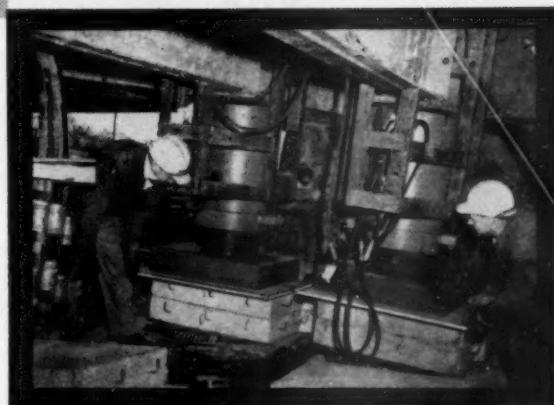
## you have a **PRESSING** need . . .

Tangye Hydraulic Presses satisfy the need for high-tonnage assembly, metal forming, bending, straightening, and a wide variety of jobs. There is a basic Tangye design suitable for every need and the final press is tailored to meet customers' exact requirements.



## . . . a **WEIGHTY** PROBLEM . . .

Tremendous weights are raised or moved by means of hydraulic power which is both powerful and easily and precisely controlled. Expert advice and complete equipment design (essential to the success of any scheme) is provided by Tangyes.



## . . . or require **POWER** in hand . . .

Quickly available and readily portable power is provided by the range of Tangye "Hydralite" Jacks. These are available in a range of capacities up to 100 tons and the majority can be carried quite easily by one man.



You should call in

**Tangye** HYDRAULIC POWER

**TANGYES LIMITED, CORNWALL WORKS, SMETHWICK, BIRMINGHAM. Telephone: SME 1181**

**LONDON OFFICE: 11 Grosvenor Hill, W.1. Telephone: MAY 1337-8-9. GLASGOW OFFICE: 12 Waterloo Street, C.2. Telephone: CEN 6368.**

**MANCHESTER OFFICE: 465 Chester Road, Old Trafford, Manchester 16. Telephone: Trafford Park 3678.**

**AGENTS THROUGHOUT THE WORLD.**

www.tangye.com

whatever the aspect . . .

PIRELLI GENERAL moves ahead

An electrified railway can only be as dependable as the cable that serves it.

Whatever the needs of railway electrification, they can be met by Pirelli-General—for signalling; for communications; for the transmission of power, overhead and underground.

Pirelli-General cables are made in compact and self-contained plants at Southampton and Eastleigh where there are full facilities for research and development in design and manufacture; and a complete sales and advisory service.

PIRELLI GENERAL

These cables are obtainable from  
G.E.C. Installation Equipment Group or  
direct from Pirelli-General Cable Works Ltd.

best way to buy

PIRELLI-GENERAL CABLE WORKS LIMITED SOUTHAMPTON & EASTLEIGH



### Here's why...

Hicycle tools are of special interest to you—

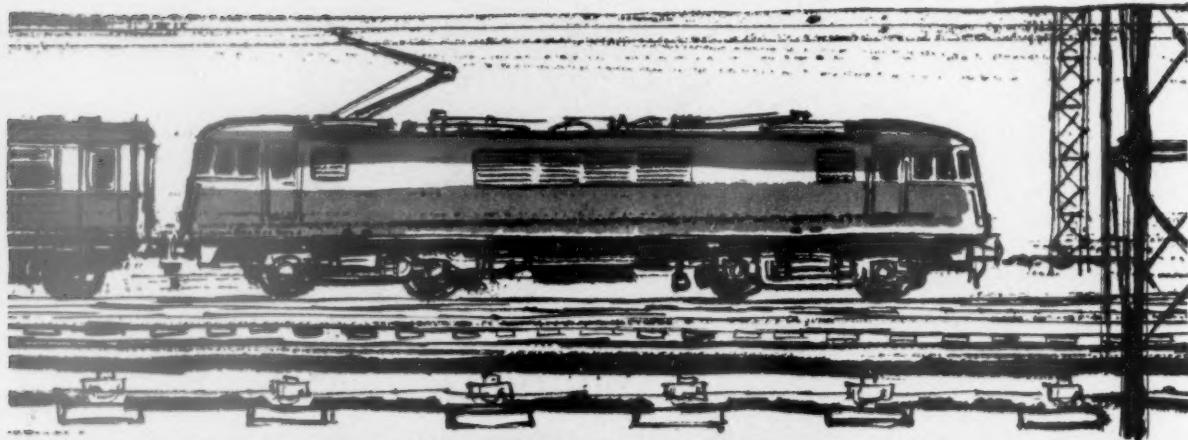
- **INCREASED PRODUCTION** A constant speed is maintained irrespective of load.
- **REDUCED WEIGHT** High sustained motor speed gives increased power to weight ratio, and so makes for effortless operation.
- **LESS MAINTENANCE** There are no commutators, brushes or brush gear to maintain, and the squirrel cage rotor cannot burn out.
- **GREATER ECONOMY** A Hicycle tool uses only a fraction of the power of a comparable compressed air tool.
- **MORE SAFETY** The voltage to earth is only 72 volts—safer than tools operating on the usual 200/250 volts.

It causes less fatigue . . . . and yet it does more work! It's a Hicycle electric tool, one of a wide range of heavy duty units which are pushing up production figures in many factories today. Its high performance is due to its constant speed under load. The tool does all the hard work which makes operation swift, smooth and effortless. The result is greater output . . . improved finish. Ask for the Hicycle catalogue.



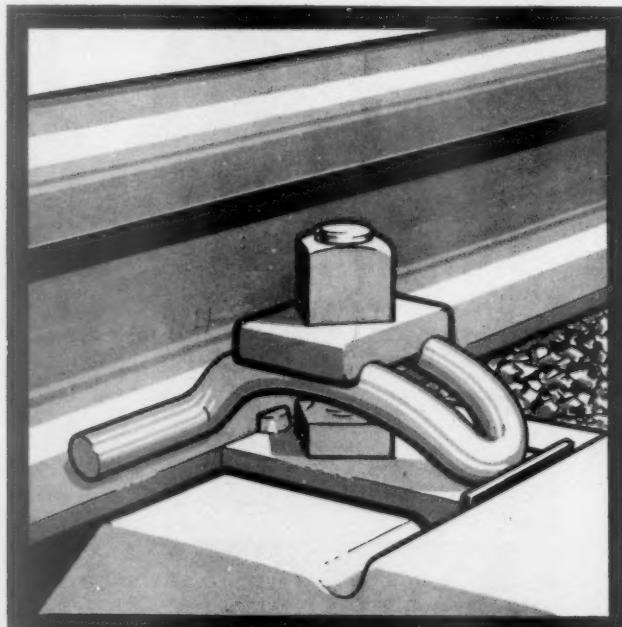
*For a  
better finish  
-faster!*

CONSOLIDATED PNEUMATIC TOOL COMPANY LIMITED  
DAWES ROAD • LONDON • S.W.6



# KEEP TRACK

Today's 100 m.p.h. traffic makes big demands on the track. To help cope with this problem, Bayliss, Jones & Bayliss have developed resilient rail fastenings for use with concrete sleepers and long welded rails. Approved by the British Transport Commission, these tough spring steel fastenings are the latest additions to the BJB range, which still includes, of course, many traditional types of fastening.

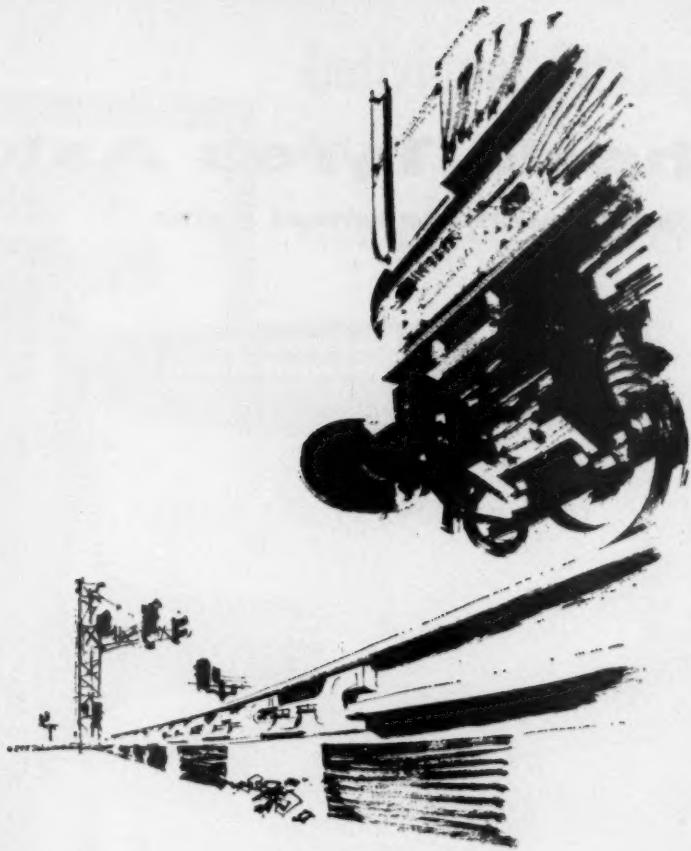


**BAYLISS, JONES & BAYLISS LIMITED**

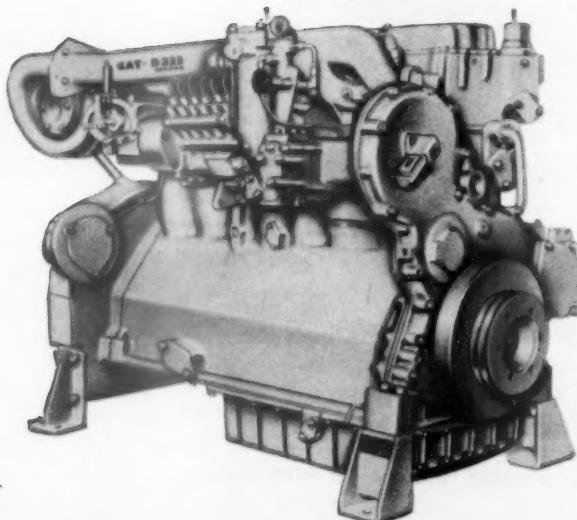
Head Office: Victoria Works, Wolverhampton. Tel: Wolverhampton 20441  
London Office: GKN House, 22 Kingsway, London, W.C.2. Tel: CHA 1616



YOU'RE  
LOOKING  
FOR  
POWER



YOU'RE LOOKING AT CAT POWER!



Nine job-tested models, all heavy duty engines. Compact, economical, lightweight and high in performance. They'll meet your industrial, marine and electric power application needs from 50 to 1,000 H.P.

These engines have abundant "Certified" power, eager to handle the tough jobs and ready to go when it comes to vital assignments. You've never known economy and long life if you haven't tried Caterpillar dependable engines.

Caterpillar power comes to you with the major cost-and-time saving advantages of service and complete interchangeability of parts—backed by the finest worldwide dealer organization.

For new equipment or for repowering, order Cat. No other name packs so much power.

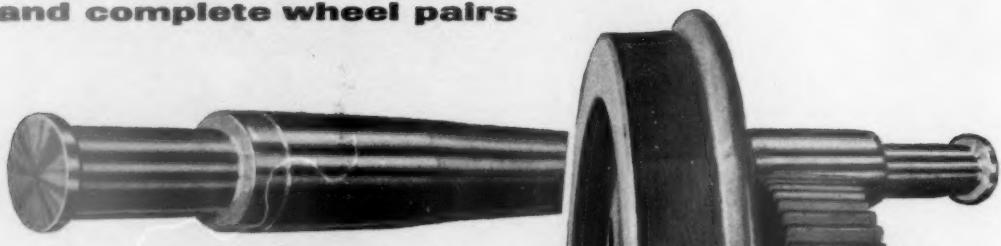
**CATERPILLAR**

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

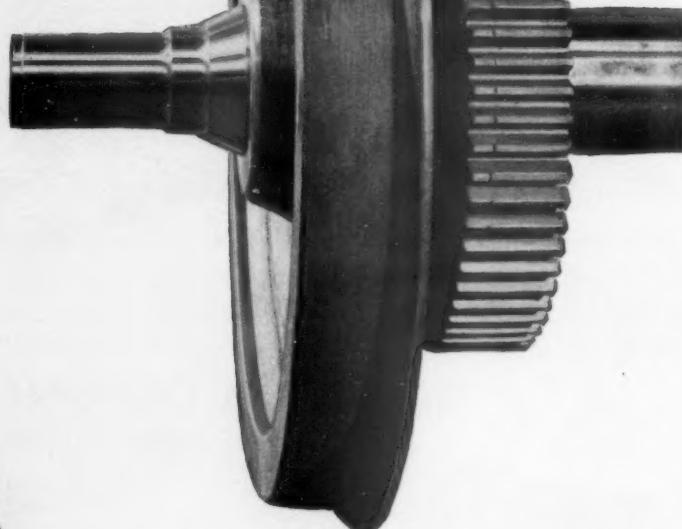
World's Greatest Name  
in Diesel Power

# Wheels Tyres Axles

and complete wheel pairs



*for the railways of the world*



## RINGS and CIRCULAR DIE FORGINGS



Seamless Rings in Carbon and Alloy Steels. Flanges of all types. Gear Rings and other rings with square, rectangular or profiled cross section, from 6 in. (minimum weight 70 lbs.) to 78 in. inside diameter and from 2 to 12 in. axial width. Circular Die Forgings, maximum weight 2,000 lbs.—plain or punched slabs and special shaped forgings up to 40 in. diameter.

# Taylor BROS. & CO. LTD

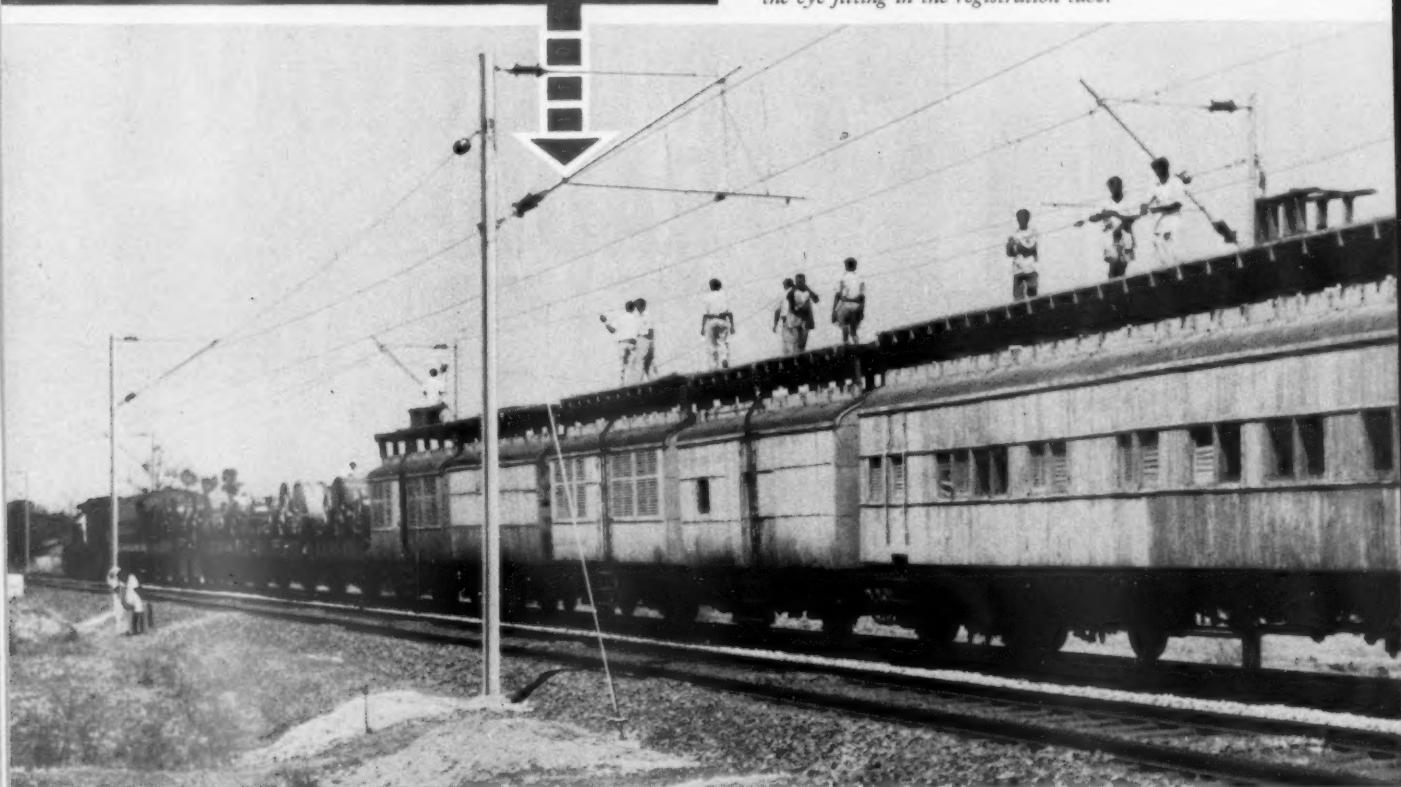
TRAFFORD PARK STEELWORKS, MANCHESTER 17

LONDON OFFICE: ST. ERMIN'S, CAXTON STREET, WESTMINSTER, S.W.1

# Individual Fittings or complete schemes



BICC compression tool positively secures the eye fitting in the registration tube.



Indian Railway Board. Construction of A.C. overhead equipment on the Eastern Railways Contract.

For half a century the BICC Group have been designing and erecting overhead electric traction equipment to suit all systems in every continent. Much of this equipment, including fittings, is manufactured within the Group; the conductors come from our own copper refinery and wire mill.

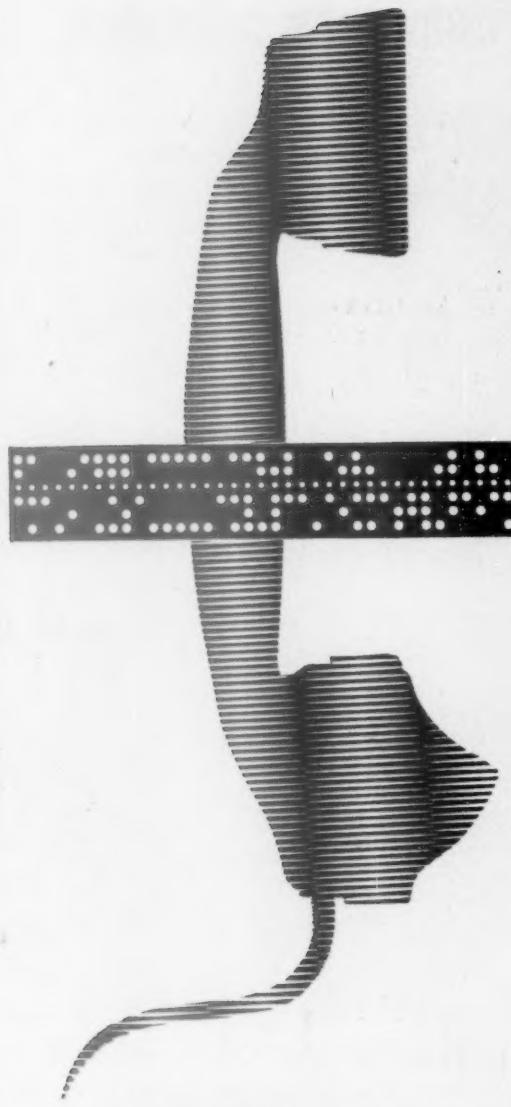
*railway electrification by the*



**GROUP**

*other services include the supply and installation of:*

**FEEDER CABLES • SIGNALLING CABLES  
OVERHEAD LINES • TELECOMMUNICATION  
CABLES • FLOODLIGHTING TOWERS  
CALLENDER-HAMILTON BRIDGES**



# FIRST RAILWAY MICROWAVE RADIO TELEPHONE SYSTEM IN BRITAIN

**300 Channels  
between  
Newcastle and York**

British Railways first microwave multichannel system from Newcastle to York via Darlington will have a 300 telephone channel capacity. The system allows for channels to be dropped off at intermediate points and can accommodate high speed data transmission.

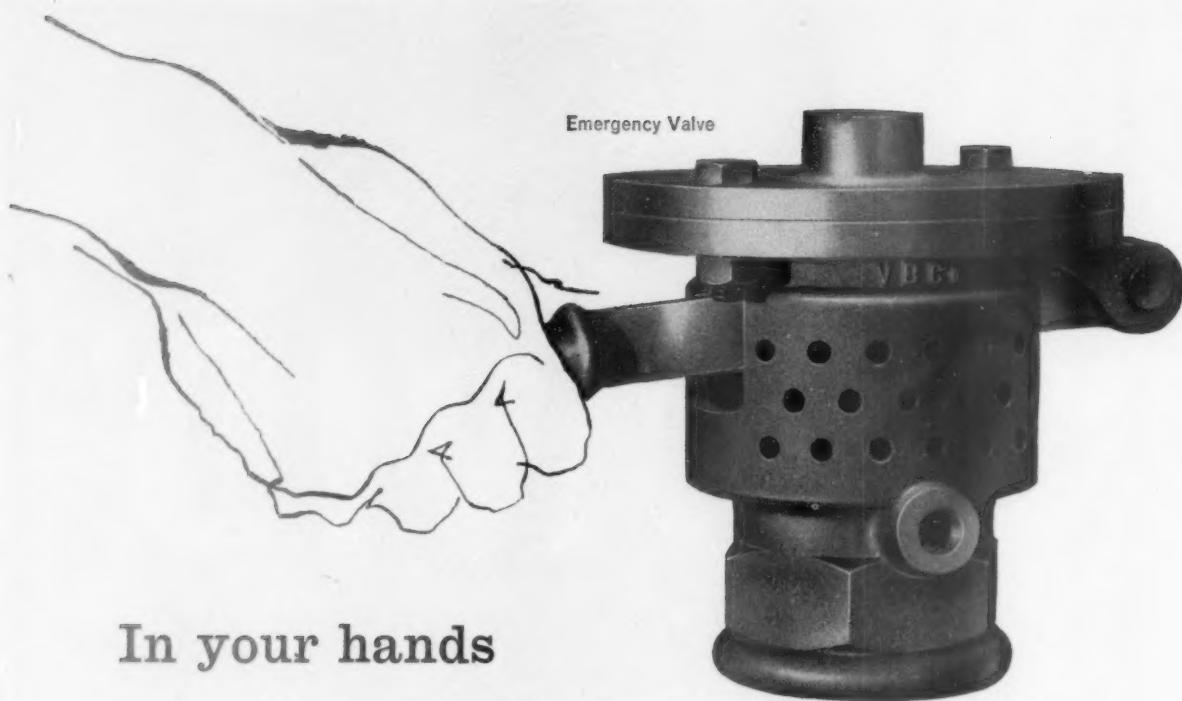
## MARCONI

COMPLETE COMMUNICATION SYSTEMS  
SURVEYED • PLANNED • INSTALLED • MAINTAINED

**'DAVID'**  
the World's Best Lever Box

*Write for illustrated folder*

THOS. SUMMERSON & SONS LTD · MOWDEN HALL · DARLINGTON · PHONE: DARLINGTON 5226  
London Office: 5a DEANS YARD · LONDON S.W.1 · ABBEY 1365



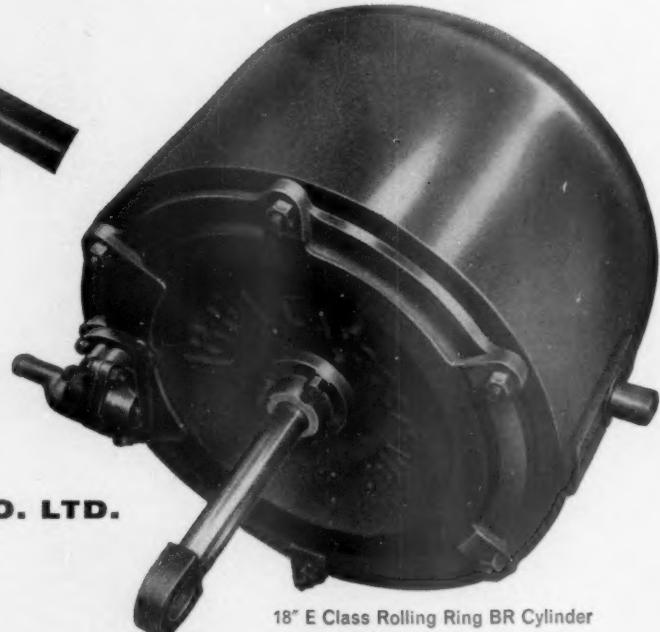
In your hands

## POWER TO STOP!

**MOST** Railway Rolling Stock, at home and overseas, relies on  
**VACUUM BRAKES**



Driver's Vacuum  
Brake Valve



18" E Class Rolling Ring BR Cylinder

**THE VACUUM BRAKE CO. LTD.**

VICTORIA WORKS.

MILLHOUSES, SHEFFIELD 8

Member of the  Birfield Group

# HIGH SPEED BULK CEMENT WAGONS BUILT BY **GLOUCESTER**

The Associated Portland Cement Manufacturers Ltd., have placed a contract for a large number of Bulk Cement Wagons with Gloucester. The wagons are designed for high speed operation over British Railways, and have a *load capacity of 27 tons, and a discharge rate of 7 tons per minute*. The tank and underframe are fabricated in aluminium alloy.



Photograph by courtesy of A.P.C.M. Ltd.

Gloucester Railway Carriage & Wagon Co. Ltd Gloucester · England · Tel: Gloucester 22111 Grams: 'Railcar' Gloucester  
LONDON OFFICE: 1-5 NEW BOND STREET, LONDON, W.1

TELEPHONE: HYDE PARK 2956

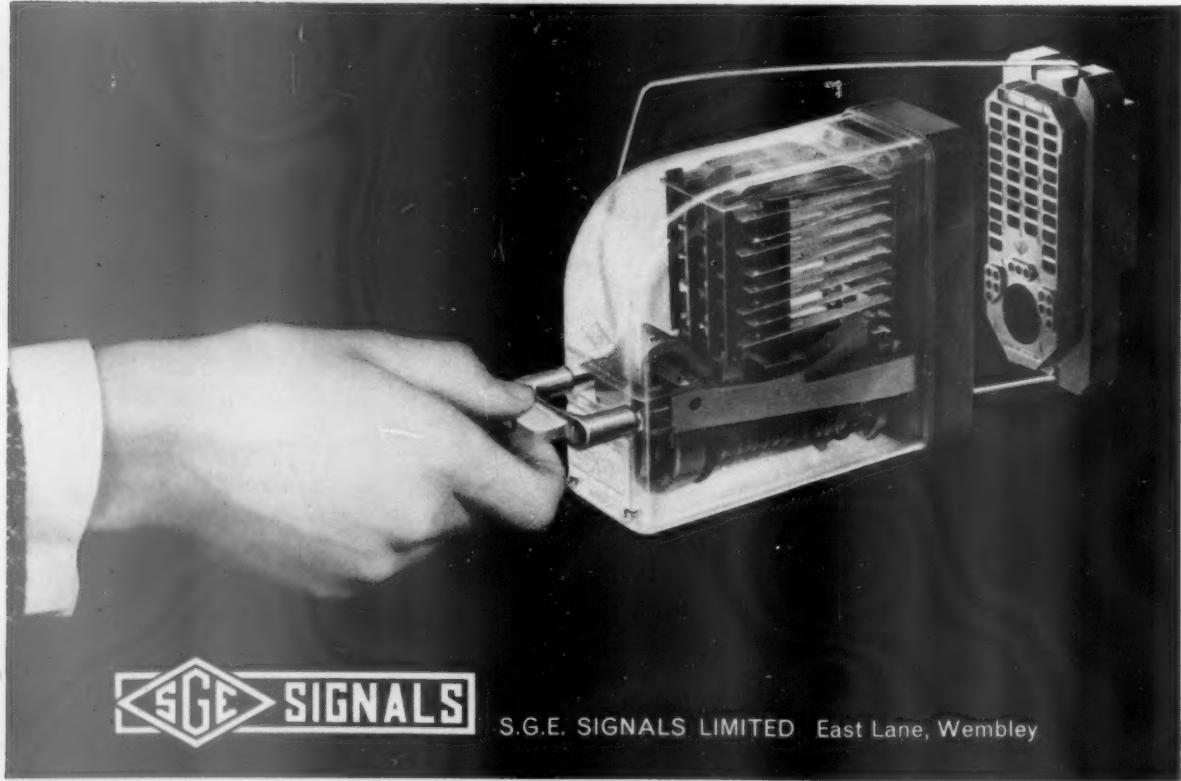


new developments in signalling by S.G.E.

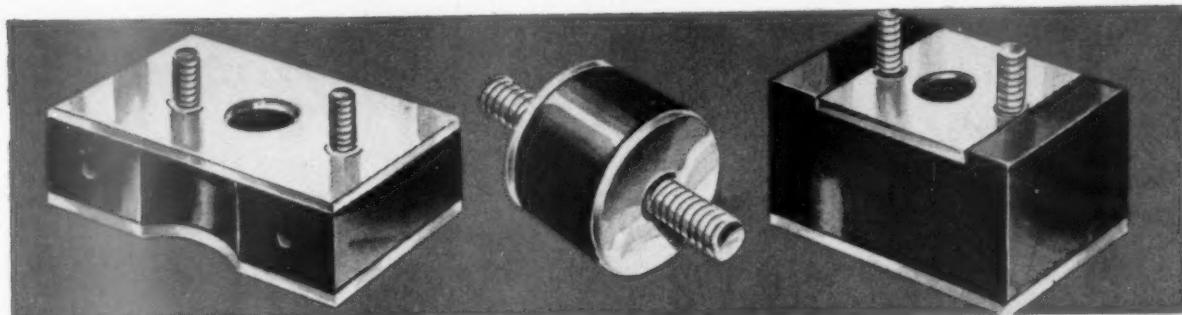
## miniature plug-in relays

TO AN ENTIRELY NEW SPECIFICATION

For many years S.G.E. has actively pursued the policy of reducing the size and cost of railway signalling equipment. Now a new range of miniature plug-in relays has been successfully developed and is already being widely adopted by British Railways and by overseas users. Each of these relays occupies only about a quarter of the space required for the former standard size and the weight is reduced in the same proportion. The cost of relay rooms and location cases will thus be greatly reduced and the increased number of contacts available on these relays and the lower initial cost will further cut down the expense of modern relay interlocking control systems. Miniaturisation is but one aspect of a large scale research and development programme being carried out by S.G.E. which will make many important contributions to the modernisation of railway Signalling. Today S.G.E. can meet all railway signalling needs and will be ready tomorrow with new, better, quicker and safer apparatus and techniques to take care of the future.



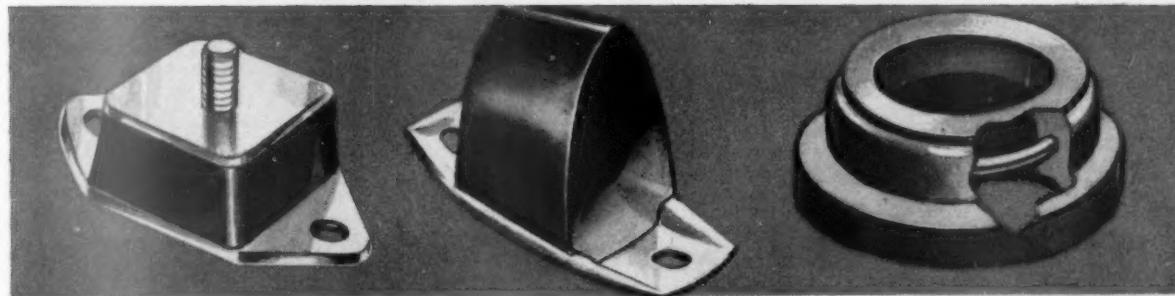
S.G.E. SIGNALS LIMITED East Lane, Wembley



# TOGETHERNESS



## in rubber and metal



Specialists in the technical rubber field, we manufacture both the rubber and the metal parts and then effect the bonding — all in our own factory. The result? Long lasting unions under all sorts of conditions.

Precision moulding of natural and synthetic polymers and resins, can be carried out in our factory to tolerances of 0·001" or 0·002", according to requirements. Our technical, scientific and design staff also carry out experimental work on new designs and applications.

- Mechanical rubber products and assemblies of all kinds
- Rubber to metal bonded resilient mountings
- Shock damping assemblies
- Rubber rail pads and mountings
- Heel blocks and wedges
- Rubber springs for buffing and draw gear for rolling stock
- Vestibule diaphragms
- Rubber gaskets, seals and extrusions
- Insulators

EXPERTS IN RUBBER TECHNOLOGY  
AND ESPECIALLY IN THE  
TECHNIQUES OF COMBINING  
RUBBER AND METAL

TEMPERED RUBBER COMPONENTS LIMITED



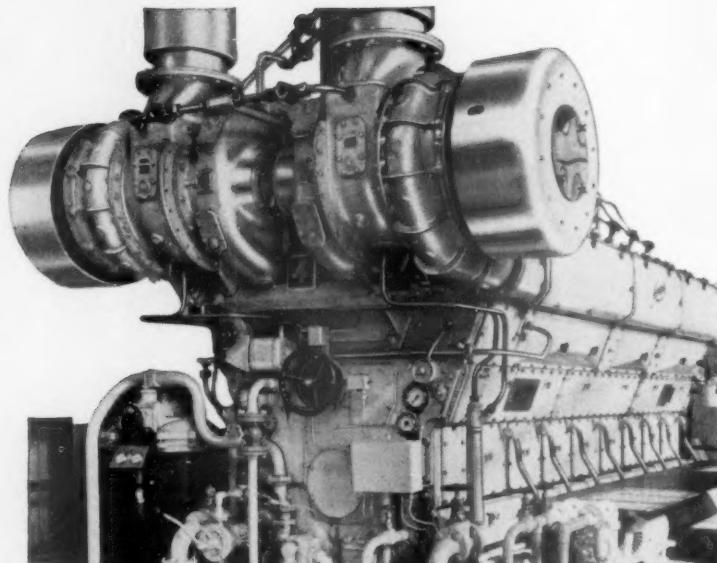
SHEFFIELD

TELEPHONE 21333-4-5  
TELEGRAMS  
TEMPERED SHEFFIELD TELEX 54-103  
P. O. BOX 17  
WARREN STREET  
SHEFFIELD, 4

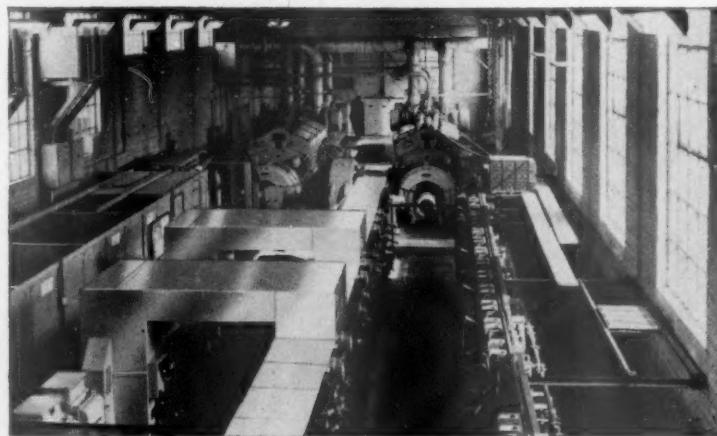
A Member of the Tempered Group

Yet another successful bearing application by

**VANDERVELL**



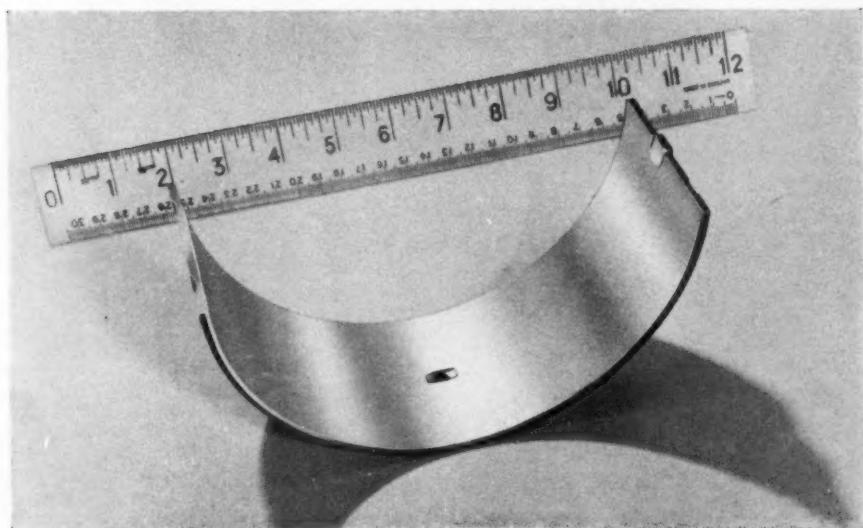
Mirrlees Engine Type JV16 as used in the Bristol Siddeley Power House. HP ratings: 1,550 BHP, 12 hr 1,360 BHP, continuous.



Part of the Bristol Siddeley Power House showing two of the six Mirrlees Type JV16 Engines giving a total output of 7,200 KVA.

**VANDERVELL PRODUCTS CO. (CANADA) LIMITED • TORONTO • CANADA**

*Installed by*  
**MIRLEES**



**This is one of the lead indium thin shell bearings in the Vandervell new size range which have completed over 15,000 hours service in Mirlees JV type engines. It again shows their ability to withstand severe operating conditions and give longer service with a minimum of maintenance.**



REGD TRADE MARK

**VANDERVELL PRODUCTS LIMITED • WESTERN AVE • ACTON • LONDON W3**

Smee V194

B\*

**for every  
type of  
locomotive**

**for ALL  
operating conditions**

In the interests of rail safety, designers of all new locomotives, rail-cars and electric motor coaches, should remember the positive reliable sweep given by TRICO heavy duty window wipers.

Higher speeds . . . more exacting requirements . . . means drivers must have the confidence which clear vision . . . TRICO vision . . . provides even under the worst possible conditions.

Let our experience gained throughout the world assist you in your designs. Our engineers are always ready to call upon you for consultation.

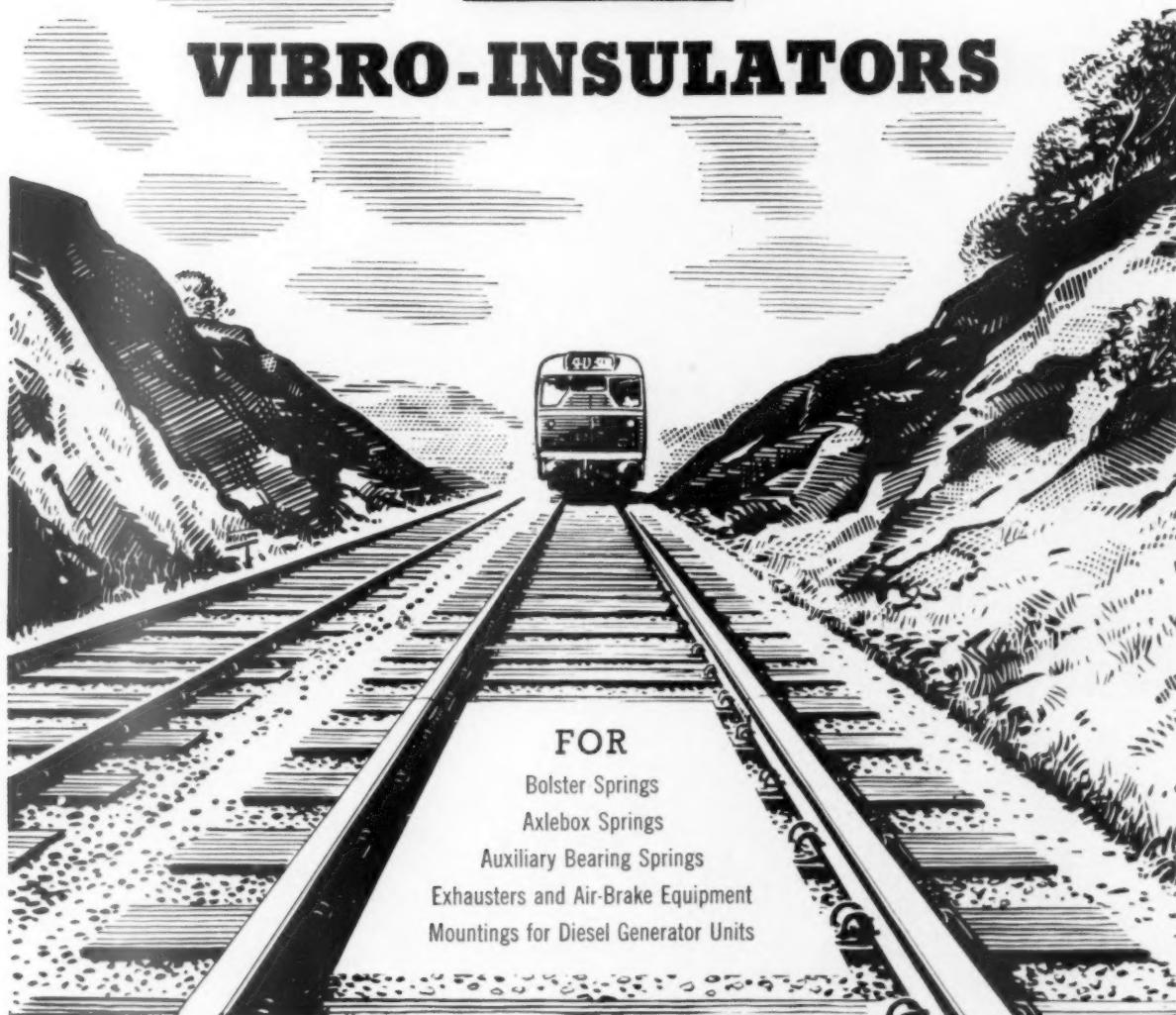
*be safe . . . right from the start with*

**TRICO** **WINDOW WIPING EQUIPMENT AND  
TWO-TONE WARNING HORMS**

# SMOOTH PROGRESS WITH

BTR

## VIBRO-INSULATORS



FOR

Bolster Springs

Axlebox Springs

Auxiliary Bearing Springs

Exhausters and Air-Brake Equipment

Mountings for Diesel Generator Units

BTR Vibro-Insulators are playing an important part in railway modernization for they are being incorporated in the latest rolling stock.

Designed to utilize the greatly superior vibration absorption qualities of rubber-in-shear as opposed to rubber-under-compression, BTR Vibro-Insulators provide the railway engineer with a simple, permanent and economic means of improved riding without major alterations in bogie design. Full details on request.



**B T R Industries Ltd**

BRITISH THERMOPLASTICS & RUBBER MANUFACTURERS  
HERGA HOUSE, VINCENT SQUARE, LONDON S.W.1

**STC**

## and railway modernisation

### PERTH RE-SIGNALLING SCHEME



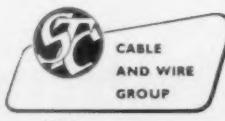
All-Plastic insulated and sheathed Telecommunication cables have been manufactured and supplied by STC for the above Scottish Region communication modernisation scheme.

These cables are for carrier and voice frequency transmission and contain from 8 to 100 Pairs of 20 and 40 lb/mile conductors.

27 Star Quad Voice Frequency Cable

19 Star Quad Composite Carrier and Voice Frequency Cable

Another STC communications cable project for British Railways



60/6B

*Standard Telephones and Cables Limited*

TELEPHONE CABLE DIVISION: NORTH WOOLWICH · LONDON E.16

*There are still a few forms of transport in which  
BROWN BAYLEY STEELS  
do not play an important part*

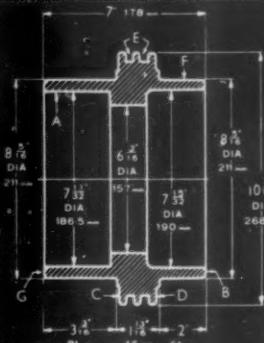


BROWN BAYLEY STEELS LIMITED • SHEFFIELD

*Ward*

SPECIAL

## TOOLING LAYOUT No. 17

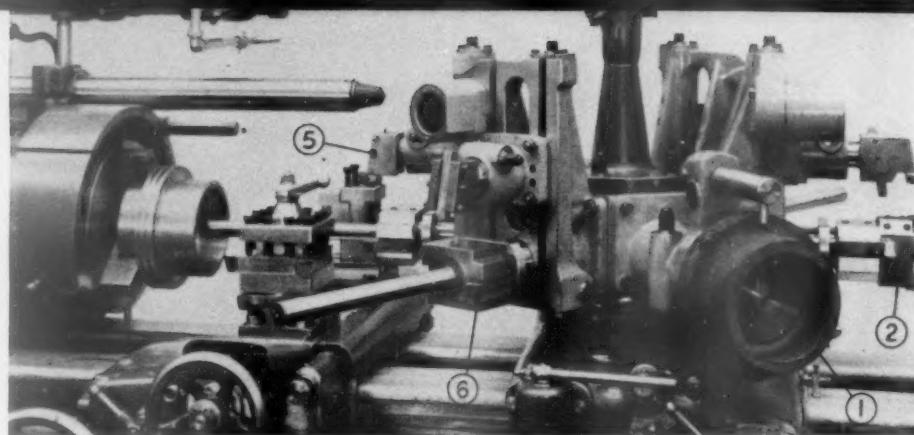


### PISTON

Machined all over.

### PERMALITE MALLEABLE IRON CASTING

Tungsten Carbide Cutting Tools.

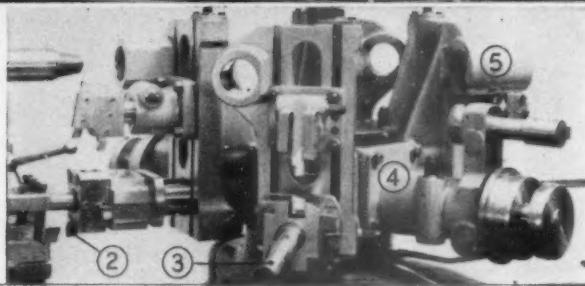


### No. 8 TURRET LATHE

Code Word : Covhylet

Equipped with 15" — 3-Jaw Tudor Chuck.

Total Floor to Floor Time : 22 mins.



DESCRIPTION OF OPERATION	Tool Position			Spindle Speed R.P.M.	Max. Cutting Speed		Feed	
	Hex. Turret	Cross-slide	Spindle		Feet per min.	Metres per min.	Cuts per inch	m/m. per rev.
<b>1st Process</b>								
1. Grip internally in "A" (using loading attachment)	1	—	S.T.1	102	229	69.7	98	259
2. Rough face "B"	—	—	—	—	—	—	—	—
3. Rough knee turn 10 1/2" & 8 1/2" dia., and rough bore 7 1/2" & 6 1/2" dia.	2	—	S.T.2	84	238	72.5	136	187
Face "D"	—	—	Rear	84	238	72.5	270	094
4. Form grooves "E"	—	—	—	102	282	89	270	094
5. Finish knee turn 10 1/2" & 8 1/2" dia., and finish bore 7 1/2" & 6 1/2" dia.	3	—	S.T.2	132	365	110.2	136	187
6. Finish face "B"	—	—	—	172	375	114	136	187
7. Remove component (using attachment)	4	—	—	—	—	—	—	—
<b>2nd Process</b>								
1. Chuck on "F" (using attachment)	4	—	S.T.1	102	229	69.7	98	259
2. Rough face "G"	—	—	—	102	229	69.7	136	187
3. Rough knee turn 8 1/2" dia. and rough bore 7 1/2" dia.	5	—	S.T.2	102	282	89	270	094
Face "C"	—	—	—	172	375	114	136	187
4. Finish knee turn 8 1/2" dia. and finish bore 7 1/2" dia.	6	—	S.T.2	172	375	114	136	187
Finish face "G"	—	—	—	172	375	114	136	187
5. Remove component (using attachment)	4	—	—	—	—	—	—	—

"PRELECTOR"  
Combination Turret  
Lathe  
with Preselective  
speed-changing.

TURRET LATHES  
with capacities up  
to 35 in. swing over bed

1 1/2 in. to 2 1/2 in. "D.S."  
DOUBLE-SLIDE  
Capstan Lathes  
for heavier  
accurate work.

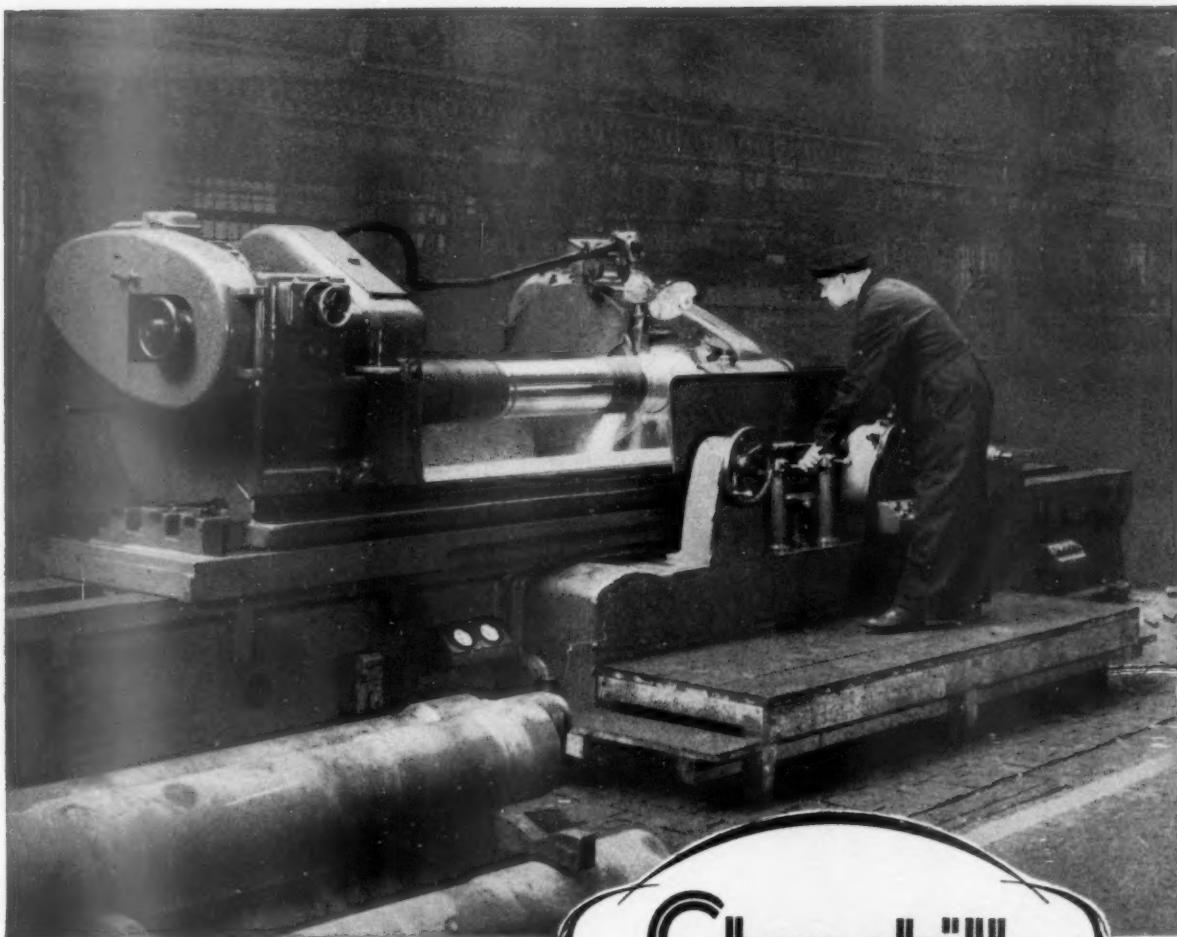
Stock Tools,  
Toolholders, Chucks  
and Accessories  
for Capstan and  
Turret Lathes.

**H. W. WARD**  
& CO LTD

SELLY OAK, BIRMINGHAM 29

Phone : Selly Oak 1131





Photograph by permission

Churchill

The illustration shows a CHURCHILL Model 'F' 24 in. by 96 in. Heavy Plain Grinding Machine in operation at British Railways, London Midland Region, Crewe Loco Shops, grinding new locomotive axles. When you consider that these large machines are built to the same high degree of accuracy as the smallest CHURCHILL Tool Room Grinders you then have another reason for their pre-eminence in industry.

THE CHURCHILL MACHINE TOOL COMPANY LTD., BROADHEATH, MANCHESTER  
*A Member of the B.S.A. Group of Companies*

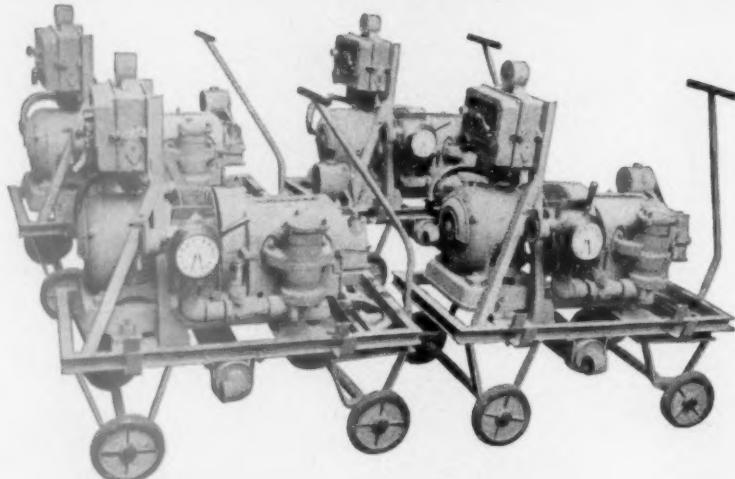


Export Sales Organisation: Associated British Machine Tool Makers Ltd., London  
Branches and Agents.

Home Selling Agents: Charles Churchill & Co., Ltd., Birmingham and Branches.

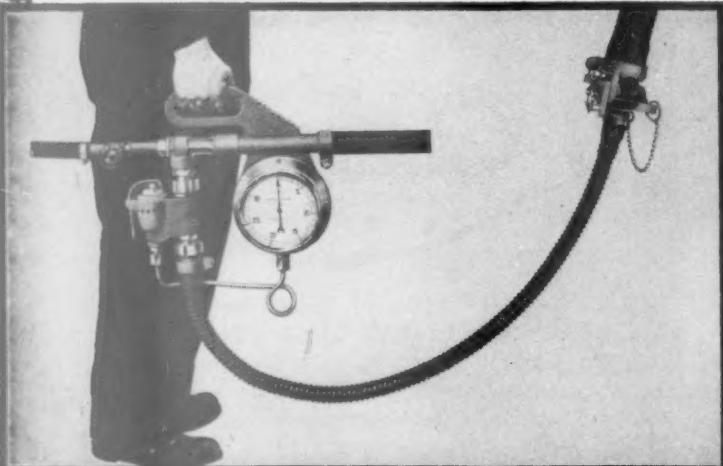
**PRECISION plus PRODUCTION**

# GRESHAM'S VACUUM BRAKE TESTING EQUIPMENT



Large stationary sets for marshalling yards, complete with testing valves and automatic control of exhauster motors, also available.

Illustration shows part of a consignment of motor driven portable testing sets incorporating Northey rotary exhausters of 90 c.f.m. capacity.



Portable compressed air operated vacuum testing set for dealing with single vehicles in workshops or repair depots.



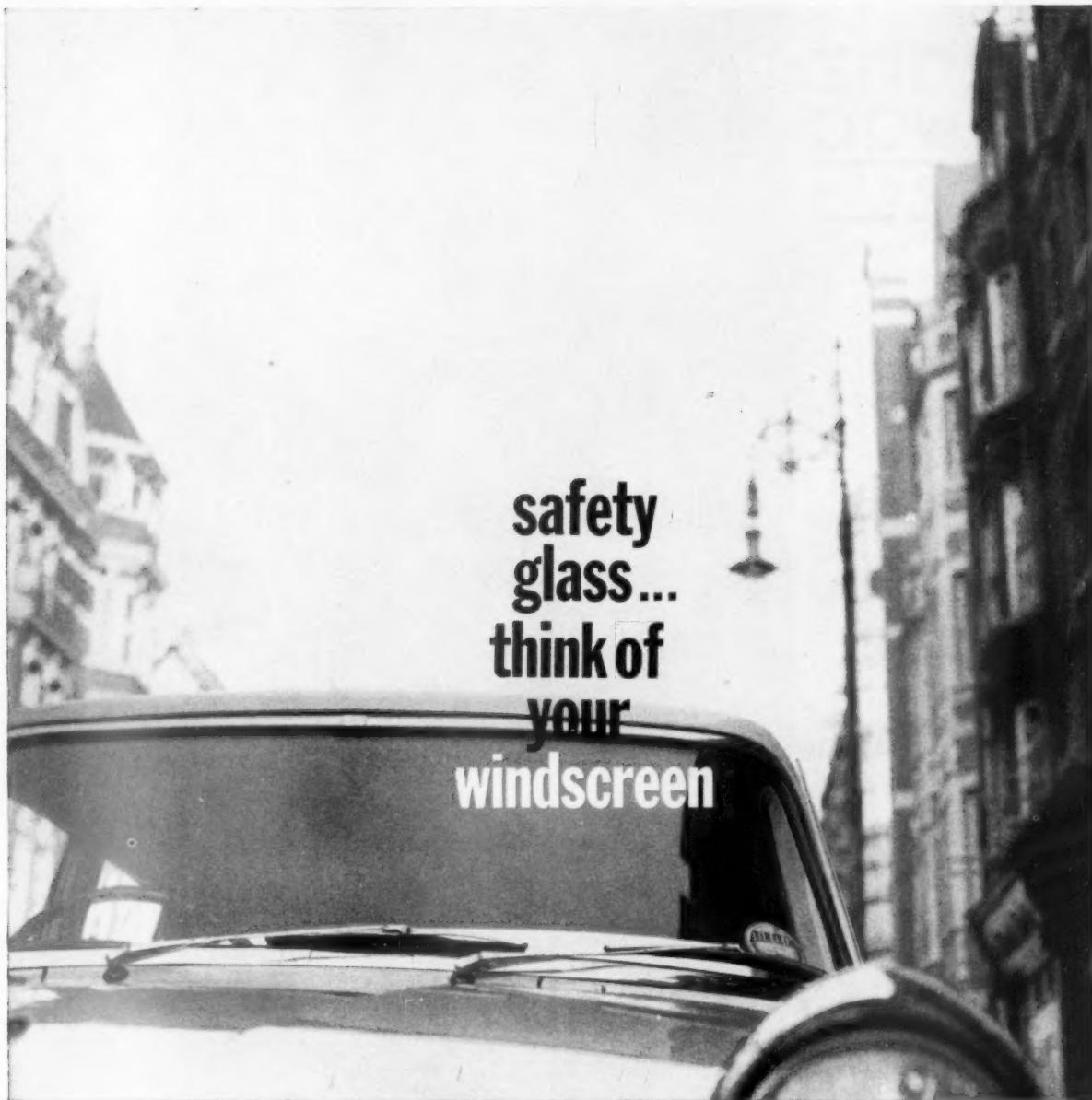
Leakage searcher for locating defective brakes on vehicles already coupled together and attached to a locomotive.

**GRESHAM & CRAVEN LTD**

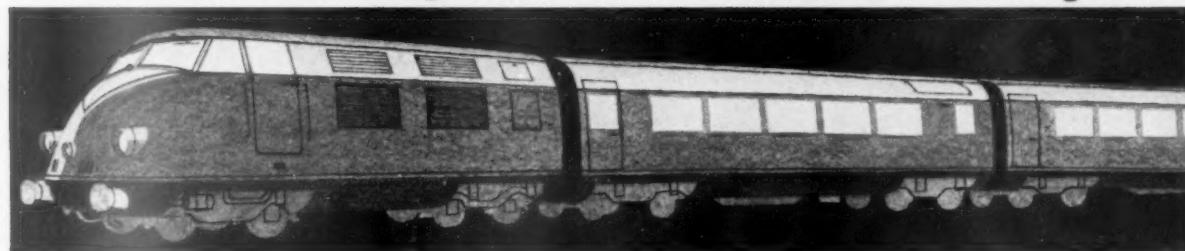
London Office & Sales : 15 WHITEHALL, S.W.1. Tel. TRAfalgar 6611-2  
Cables, Loco Brake, London



HEAD OFFICE AND WORKS : Brake Division, P.O. Box No. 4,  
Norfolk Street, Worsley Road North, WALKDEN, Manchester.  
Tel.: FAO 2041 (14 lines) Grams: BRAKE, PHONE, WALKDEN, MANCHESTER



Now ...**TRIPLEX** Toughened Glass for tomorrow's rolling stock



For many years now, Triplex glass has been a familiar and reassuring feature to millions of motorists. Now Triplex Toughened Glass joins Triplex Laminated Glass in the industrial field. It is available now to the designers and manufacturers of railway carriages and other rolling stock. If you have any technical problems or special requirements concerning safety glass, write to us.

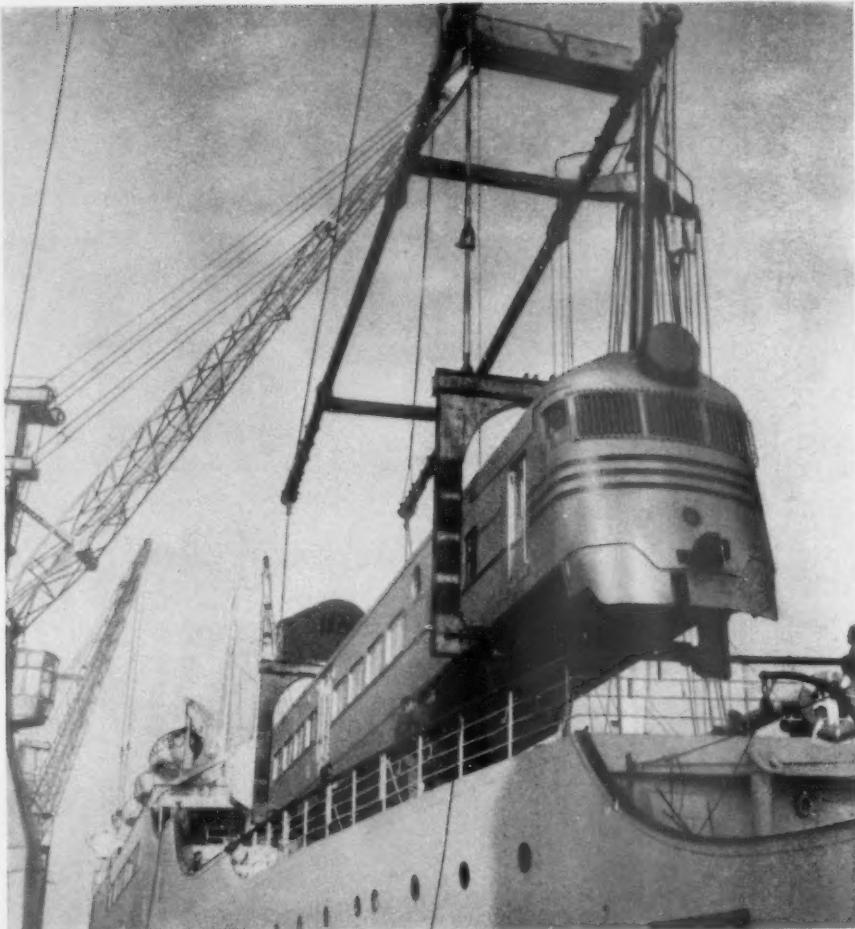
**TRIPLEX**



THE TRIPLEX SAFETY GLASS COMPANY LTD. AT BYTHE ROAD, WILLESDEN, LONDON, N.W.10, KINGS NORTON, BIRMINGHAM, OR ECCLESTON, ST. HELEN'S, LANCS.

Ganz  
Mávag  
BUDAPEST

WE ARE  
SHIPPING  
THEM  
ALL OVER THE  
WORLD !!

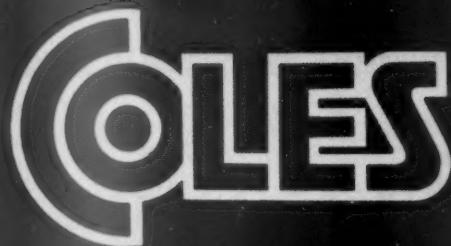


SPEED • COMFORT  
RELIABILITY • BEAUTY OF DESIGN

- ★ Diesel and Electric Locomotives
- ★ Railcars
- ★ Railcar Trams

**GANZ-MAVAG LOCOMOTIVE AND  
RAILWAY CARRIAGE MANUFACTURERS,  
MECHANICAL ENGINEERS**

BUDAPEST 70 • P.O.B. 136 • HUNGARY  
Cables: *Ganzmávag Budapest*



# ANNOUNCE THE FOUR TON LEDA

Here is a crane with everything! Fast travel; all controls from one position; power-assisted steering; full-circle-slewing; automatic safety features; speed with precision and safety; 12 feet kerb radius manoeuvrability; road and yard performance . . . It's a Coles diesel-electric quality specification at a world beating price!



Available with either  
cantilever or strut jib (with  
outriggers on strut version).

1032

Coles Cranes is a Registered Trade Mark



STEELS ENGINEERING PRODUCTS LTD.

STEEL HOUSE, EASTCOTE, MIDDLESEX.

SALES AND SERVICE: LONDON, BRISTOL, BIRMINGHAM, MANCHESTER,  
LEEDS, NEWCASTLE, GLASGOW.

THE NAME THAT  
CARRIES WEIGHT

from Cardiff to Capetown, Middlesborough to Melbourne, Warrington to Winnipeg

**PEARSON**

ELECTRO-HYDRAULIC PRESSES AND GUILLOTINES...

**IN SERVICE ALL OVER THE WORLD**



Guillotine Shears from  $\frac{1}{8}$ " to 1" M.S. Capacity. Presses from 50 to 1200 tons.

**PEARSON MACHINE TOOL CO. LTD.**

WALKER • NEWCASTLE UPON TYNE 6 • Telephone: Wallsend 625101 (6 lines)

CANADIAN BRANCH: PEARSON MACHINE TOOL CO. LTD., 46 ADVANCE ROAD, TORONTO 18, ONT.

The illustration shows a Pearson Electro-Hydraulic Guillotine Shear of 6' - 0" x  $\frac{1}{8}$ " M.S. Capacity installed at the works of Dominion Bridge Co., Regina, Saskatchewan.

# METCALFE'S

AIR BRAKE EQUIPMENT  
for Locomotives



OERLIKON PATENT  
DESIGN

**TYPE FV.3** An Automatic Driver's Air Brake Control Valve suitable for medium length goods and passenger trains or railcars, etc. This Valve is simple to operate and of light weight construction. It enables the full benefit to be obtained from modern step-by-step application and release of air brakes.

Leaflet A.1.



**TYPE FV.4** A standard Driver's Automatic Air Brake Control Valve with automatically controlled high pressure brake releasing impulse. This Valve enables the maximum speed of brake release to be obtained, and in addition enables the full utilisation of all the advantages associated with modern air brakes. The Valve is reliable in service and simple to operate and maintain and is especially suitable for long express passenger and goods trains.

Leaflet A.4.



**TYPE FD.1** This is a simple Brake Control Valve suitable for direct braking or shunting brake requirements. It is very simple to use and accurate in operation. The type FD.1 Valve can also be adapted for the control of the Diesel engines and can also be made suitable for cam operation.

Leaflet A.13.



**TYPE LST.1** A locomotive Triple Valve of modern and simple design. The LST.1 Operating Valve embodies a control for freight or passenger train operation, together with a high efficiency Brake relay, also an Anti-skid Brake device may be provided when required. This Valve is capable of controlling the air supply to several Brake Cylinders when required.

Leaflet A.2.

**DAVIES & METCALFE LTD.**

INJECTOR WORKS · ROMILEY · ENGLAND

Telephone: WOODLEY 2626 (2 lines)

Telegrams: EXHAUST, ROMILEY

R.G.6

C\*

**WARD  
BUILT  
SIDINGS  
AT  
COLVILLES**

**RAVENS CRAIG WORKS**



**THOS. W. WARD LTD**

**ALBION WORKS · SHEFFIELD · Phone: 26311 (22 lines)**

LONDON OFFICE: BRETTENHAM HOUSE, LANCASTER PLACE, STRAND, W.C.2.

PHONE: TEM. 1515

# JOHN BULL



## PRESCOLLAN® POLYURETHANE RUBBER

High tensile strength, resistance to impact, a remarkable capacity to withstand abrasion and tearing are the outstanding characteristics of Prescollan—the polyurethane rubber manufactured by John Bull for exacting and heavy-duty applications. The resistance of Prescollan to tearing and abrasion is five times better than that of the best natural rubber tyre tread stock.

Prescollan resists many oils and fuels, weathering and ozone attack and may be used in temperatures up to 100°C. Due to the very high modulus of the harder grades, it combines the advantages of rubbers and plastics.

Specialised grades of Prescollan have been developed by John Bull. Our technical staff will be glad to advise on the selection of the most suitable grade for your application and to assist with the design of components so that full advantage may be gained from Prescollan's unique properties.

\* Registered Trade Mark

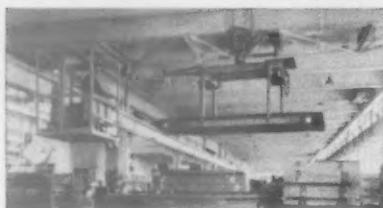
JOHN BULL RUBBER CO. LTD. (Mechanical Products Division) LEICESTER  
TELEPHONE: 36531

Prescollan components illustrated are Bellows, Diaphragm, Steering Joint Cover, Roller Section for rice mill, Buffer, Machine Tool Slideway Wipers and Silent Gears.



# It shows in the costings— THE MONEY A MANSAYER SAVES!

- Electrically operated "Mansaver" grabs give maximum speed and ease of operation, plus maximum safety.
- The "Mansaver" range of grabs is the result of long and detailed research into industrial needs and conditions.
- There's a "Mansaver" grab to handle coils, sheets, bars, slabs, billets, tubes, paper reels, palleted loads, bales, barrels and many other materials.
- Manual, semi and fully automatic mechanised grabs for other applications.



"Mansaver" Style 1142 4½-ton hand-operated grab handles sheet steel packages for Coventry Radiator. 48" to 112" length, 24" to 50" width. Leg adjustment for width by hand-chain wheel. End hooks fitted to support sheets at mid-span where required.



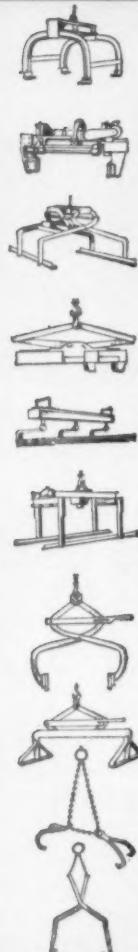
For Alcan Ltd, England—10½-ton motor-operated "Mansaver" Style 1142 handles aluminium slabs up to 85 feet long, 36" to 84" wide. 13 pairs telescopic legs are adjusted for load width by one common drive. Two-point suspension from overhead crane.



The "Mansaver" grab, Style 1588, motor operated rotating crane hook to give controlled rotation of loads where required. Illustration shows a "Mansaver", Style 1418, motor operated coil grab suspended from the hook.



50 tons capacity, "Mansaver" grab, Style 1142. Handling trays of aluminium coil at Alcan Ltd. Legs are power operated and controlled by overhead crane operator.



FOR TECHNICAL DETAILS OF THESE AND THE MANY OTHER 'MANSAYER' APPLICATIONS, WRITE OR 'PHONE

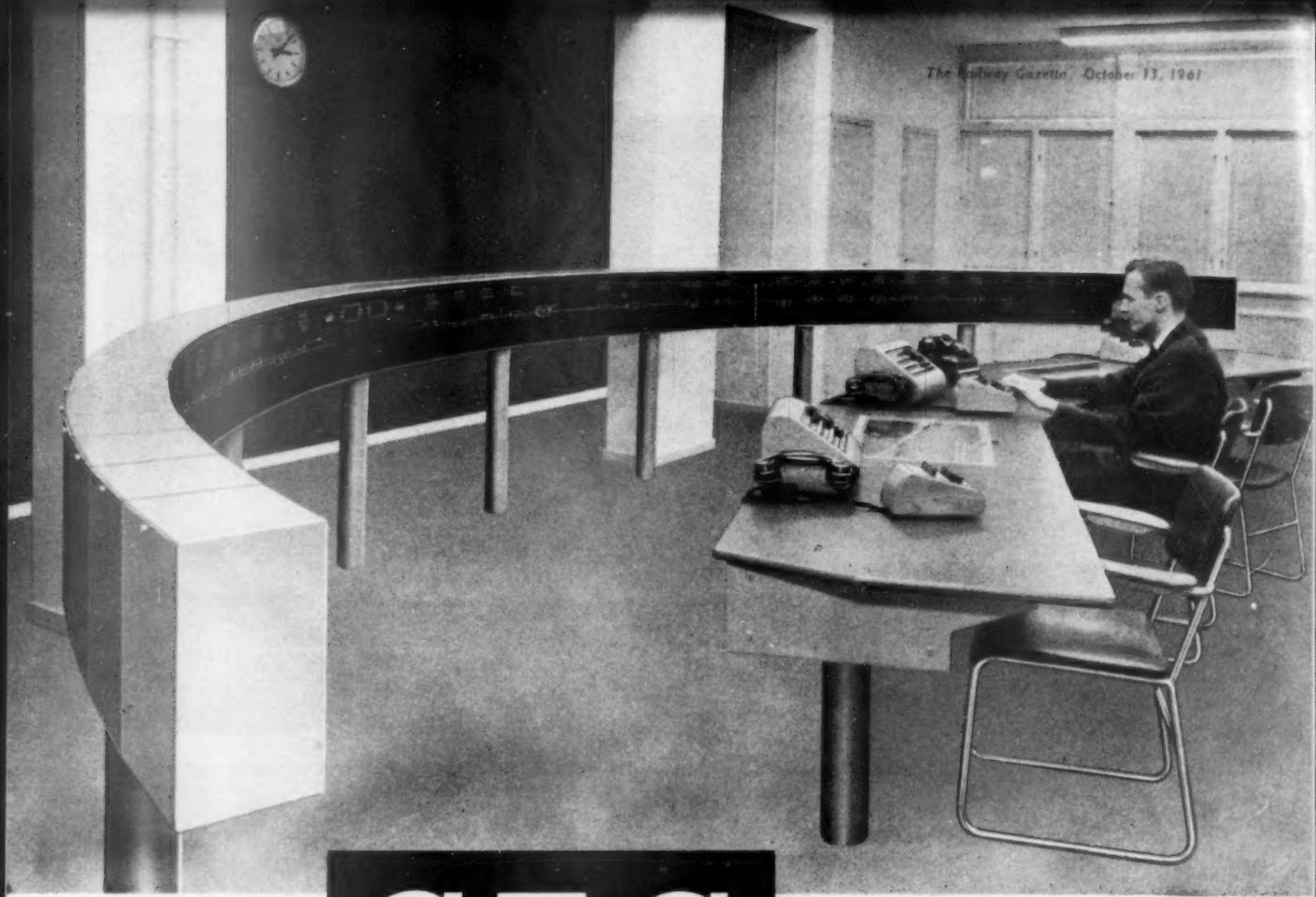
**KING**



**GEO. W. KING LTD.**

ARGYLE WORKS (RG/70), STEVENAGE, HERTS.

TEL: STEVENAGE 440



Largest

C.T.C.

plant

in Europe

On January 30 this year the Swedish State Railways opened the first section of the C.T.C. plant on the Ljusdal—Långsele line. The C.T.C. office is situated at Änge and, when the plant is completed, will control 41 stations extending over a distance of 170 miles. This will be the largest C.T.C. plant in Europe.

The C.T.C. equipment was supplied by L M Ericsson.



LM ERICSSONS SIGNALAKTIEBOLAG  
Lövholmsvägen 93 Stockholm Sv Sweden

Represented in Great Britain by: ML Engineering (Plymouth) Ltd, 293 Leigh Road, Trading Estate, SLOUGH



Over 1800 diesel main line locomotives  
are now in service or on order under  
British Railways Modernisation Plan.  
Of this total, by far the largest proportion  
are equipped with

**SKF** spherical roller bearing axleboxes

THE SKFKO BALL BEARING COMPANY LIMITED • LUTON • BEDS

OVER 1,850,000 **SKF** ROLLER BEARING AXLEBOXES HAVE NOW BEEN SUPPLIED TO THE RAILWAYS OF THE WORLD  
R.103

*The*  
**RAILWAY GAZETTE**

INCORPORATING: THE RAILWAY ENGINEER • TRANSPORT • THE RAILWAY NEWS • THE RAILWAY TIMES • RAILWAYS ILLUSTRATED  
HERAPATH'S RAILWAY JOURNAL (ESTABLISHED 1835) • THE RAILWAY RECORD • THE RAILWAY OFFICIAL GAZETTE

A journal of Management, Engineering and Operation

VOL 115

FRIDAY OCTOBER 13 1961

No. 15

## CONTENTS

	PAGE
Editorial notes ...	409
Limited help for exports ...	411
Railway operating practice ...	412
British experience with 50-cycle traction ...	412
A cast into the future ...	413
Design and the B.T.C. ...	413
Letters to the Editor ...	414
The scrap heap ...	415
Overseas railway affairs ...	416
Electric cranes at Canning Town in the Eastern Region ...	417
Signalling development on the Malayan Railway ...	418
The Estate & Rating Surveyor in relation to modernisation ...	420
L.T.E. and Paris Metro charges and practice ...	422
Bulk cement and bitumen wagons in New Zealand ...	424
Canadian National Railways headquarters building at Montreal ...	425
Personal ...	427
New equipment and processes ...	429
Accident report—collision at Baschurch ...	430
News articles ...	431
Contracts and tenders ...	434
Notes and news ...	435
Railway stock market and official notices ...	436

Editor: B. W. C. Cooke, Assoc. Inst. T.

33, TOTHILL STREET, WESTMINSTER,  
LONDON, S.W.1

Telephone: WHitehall 9233 (24 lines)

Telegrams: "Trazette Parl London"

Overseas telegrams: Trazette, London, S.W.1

### BRANCH OFFICES

GLASGOW: 139, Bothwell Street, C.2

NEWCASTLE UPON TYNE: Cathedral Buildings, Dean Street, 1

Newcastle upon Tyne 22239

MANCHESTER: Century Insurance Building, St. Peter's Square

Central 7667-8-9

BIRMINGHAM: 90, Hagley Road, Edgbaston

Edgbaston 5454 (Three lines)

LEEDS: 70, Albion Street

Leeds 27174

BRISTOL: 20, Victoria Square, Clifton

Bristol 33873

Annually £5 by post

Single copies, two shillings

Registered at the G.P.O. as a newspaper.

Entered as second-class matter in U.S.A.



MEMBER OF THE  
AUDIT BUREAU  
OF CIRCULATIONS

Central 4646

than by any failure to expand exports. He also made the very pertinent point that Government spending abroad absorbed virtually all the surplus on invisible transactions which in the past offset our adverse trading balance. To find a solution to present difficulties it was not enough to exhort industry to greater efforts. On the other hand, Mr. Harrison agreed that this country was beginning to have difficulty in certain markets because of high costs and he expressed his view that a phase had been entered where the people of this country wanted an affluent society but were reluctant to work for it. Under the chairmanship of Sir Hugh Beaver, prominent members of the Federation have been studying export problems, and as a result it is felt that consideration should be given to all the impediments to production which industrialists have to face. This includes such subjects as the effect of taxation, restrictive practices in all quarters, and a whole range of difficulties and limitations of which industrialists are only too well aware. He emphasised that great importance was attached to an arrangement whereby different industries would have an opportunity to take part in planning exercises, but he was sure that any attempt to impose control would meet with disaster.

### Joint efforts required

MR. HARRISON suggested that what was required at the present time was a free association of Government, industry and the unions discussing how best to increase the volume of our national wealth. It was high time that efforts were concentrated on producing real wealth and on seeing that that wealth was distributed wisely. He believed that the new concept of a National Economic Development Council could aid that end. He felt sure that the decision to apply for membership of the European Economic Community was bound to have a profound effect on the country's economy and on British business policies. It was essential to all industrialists, and to the trade of the nation as a whole, that these matters should be taken seriously and that each should do his utmost to achieve more efficient production, greater wealth and the wiser use of that wealth once it had been created. He felt that the prospects before British industry for the next few years were challenging and at the present time presented a wonderful opportunity.

### Halt on supply of brake cylinders

THE British Transport Commission, to which the Westinghouse Brake & Signal Co. Ltd., has been supplying cylinders for vacuum brakes for some years, has terminated this contract. The manufacturer is preparing a claim for compensation for loss of business. The measure, which has partly arisen from the recent curtailment of the Commission's wagon programme to a greater extent is the result of a failure to agree an acceptable system of close coupling, although solutions to this problem are in sight. This failure has resulted in great part because of operating difficulties. A more recent aspect of the matter, and one the effects of which are not yet known, will be provided by the findings of the study groups instituted by the Chairman

### An industrial view on exports

GOVERNMENT spokesmen are much given to expounding their views on the need for increasing export trade and to inciting British manufacturers to make further efforts in this direction. As we have endeavoured to show in recent issues, there is another side to this problem and one which deserves careful study by the Government. It is particularly important, therefore, to find the industrial view on export trade put forward with reason and some force by Mr. C. E. Harrison, President of the Federation of British Industries, at a luncheon of the North Midland Region Council of that body last week. He pointed out that the deficit shown by the balance of payment figures in 1960 was caused more by large increases in imports

of the British Transport Commission, Dr. Richard Beeching, into the future pattern of British railway traffic. Meanwhile, the Commission has stated that full use will be made of the brake cylinders already to hand and that there will be no wastage.

### A signalman's lapse

THE collision, last February at Baschurch, between Shrewsbury and Chester, in which three railwaymen lost their lives, was primarily due to a signalman failing to make certain that a freight train had been shunted completely clear of the main line before re-setting the road and signalling forward a following express. A minor factor was that the guard of the freight train applied his brake too soon. As Colonel D. McMullen points out in his report, summarised on a later page, track-circuiting at Baschurch would have prevented this accident, but there are many places which will remain without track-circuits for a long time to come. It is, therefore, essential that signalmen should comply with the rules and not make foolish mistakes, and this accident should serve as a useful lesson. After the accident fire broke out and destroyed two vehicles, one of which had a propane gas installation. It is reassuring to learn from the report that there was no evidence of any explosion, or that propane gas was the cause of the fire. On the contrary the safety devices attached to the installation worked correctly. This was a redeeming feature of a tragic accident.

### Challenge to transport men

BOTH the art and science of transport were dealt with by Mr. James Amos in his presidential address to the Institute of Transport on Monday last. He pointed out that there was no ground for considering transport as a decaying industry, and still less as one without a future. Private transport was a challenge to all men in the industry. Because of its enormous growth it was now threatening to choke itself. With proper and intelligent management, the public could be won back to public transport. The main problem was to ensure that public transport could pay its way after giving adequate services to customers, appropriate wages and conditions to staff, a reasonable return on capital, and the retention of the confidence and goodwill of the customer. Bus transport, in many ways, had become very much more like railway transport, and the latter's costs of operation had enormously increased, notwithstanding the most courageous efforts to modernise and to effect economies. In no form of transport had charges kept abreast of the increased costs of operation.

### Latin American opportunity

THE future flow of capital in the form of loans, investment, and trade credit, will increasingly determine the origins of capital equipment. This view was expressed by Mr. W. J. M. Longmore, leader of the Latin-American Division of the Western Hemisphere Exports Council, speaking at the Golden Jubilee Conference of the British Electrical & Allied Manufacturers' Association in London, on October 5. Mr. Longmore pointed out that Latin America was developing very rapidly and it was no coincidence that the United States had supplanted Britain in Latin-American trade at the same time as it became the principal source of capital. Opportunities in the larger Latin-American countries would be confined increasingly to imports of capital equipment, most of which would be linked with the provision of aid and loan funds in one form or another. There were opportunities for exports of semi-capital goods in most of the smaller countries of Latin America. The market as a whole, comprising 20 separate republics, was certain to constitute in the long run one of the most rapidly developing and high consuming areas in the world.

### Britain's exports to Europe

BRITISH exports to the 19 European countries which previously formed the O.E.E.C. totalled £870 million during the first eight months of this year, an increase of 14 per cent compared with the same period last year. These facts were made known by Sir William McFadzean, Chairman of the Export Council for Europe, speaking at the Golden Jubilee Export Conference of the British Electrical & Allied Manufacturers' Association in London, on October 5. He also gave some pointers to successful exporting to Europe, stating that top priority should be given to visits by executives to assess opportunities at first hand, and to Trade Fairs. British achievements must be publicised, and the image projected of an efficient and progressive industry. Many companies were already doing a good job but there were too many instances of broken delivery promises and lack of service. Exporting should not be regarded as the overspill of a lush home market with the inevitable neglect of marginal markets when home demand was booming.

### Pattern of overseas trade

ABOUT 300 delegates from the electrical manufacturing industry discussed aspects of exporting during the Golden Jubilee Export Conference of the British Electrical & Allied Manufacturers' Association in London on October 6. Under the subject of the changing pattern of overseas trade, discussion centred on the fact that the pattern of overseas trade for the United Kingdom is being changed by increasing industrialisation throughout the world. Traditional primary producers have begun to manufacture for themselves and, in some instances, to export, while the industry of the traditional manufacturing countries continues to grow. Overall competition on the world market is becoming more acute, and British industry must face this reality. The formation of U.K. consortiums is to be recommended: finance for major overseas projects should be made available at competitive rates of interest. Companies acting as main contractors should see that suitable sub-contractors are notified of opportunities and, where necessary, should help smaller concerns by marketing their products.

### British Transport advertising

LATEST figures published giving amounts spent by advertisers using British Transport advertising sites for the 12 months ended June 30, 1961, show an increased expenditure by 21 of the 31 major users: £251,000 more was spent in or during the corresponding period last year. These receipts indicate that manufacturers and providers of facilities are becoming increasingly aware of the value of the "captive" audience provided by British Transport vehicles. Cinemas in particular can benefit from the opportunities. At present, cinema corporations appear to confine their efforts to advertising West End attractions: it is not always easy to discover the programme offered by local cinemas. Posters on platforms advertising films shown in the district of the station concerned might well attract passengers out of their trains on the way home or suggest an after-supper entertainment, either for the individual or for the family. Restaurants adjacent to cinemas might be interested in linked advertising; particularly those restaurants which are fully licensed and which offer good meals at competitive prices.

### Bus terminal for U.T.A.

PART of the improvement of passenger transport terminal facilities in Belfast will be provided by modernisation planned by the Ulster Transport Authority for Great Victoria Street Railway Station. This project will provide a rail, bus, and air terminal before the end of next year. The new station will serve road services now dealt with at Smithfield and College Square and will relieve local traffic congestion. The concourse

and railway platforms will be remodelled and a new booking office and customs examination building will be provided. The customs office will be re-sited and the booking office will be of a design similar to that of the waiting room provided earlier this year. On the south side of the Boyne Bridge, and adjoining the goods depot, will be a bus park, maintenance garage (including washing and fuelling plants), and staff room and canteen on the parking area. Buses moving between park and bus station will pass under the road-bridge and will not interfere with the flow of street traffic.

### Rowan & Boden centralisation

THE first step in the centralisation of the Scottish activities of the Rowan & Boden group was taken on October 6 when Mr. John S. MacLay, Secretary of State for Scotland, opened its new headquarters at Renfrew Road, Paisley. At present, the group has four factories—three near Glasgow and the other at Tyseley, Birmingham. A fifth factory is to come into operation at Redditch, Worcestershire. The group, which began operations in Greenock 52 years ago as ship furnishers, has steadily expanded and now undertakes an increasing amount of business for hotels, clubs, and office buildings and is developing its work in plastics, floor coverings, and weather decking. Built with solid partitioning between rooms, instead of the glass-panel partitions more usually constructed today, the new Paisley premises provide a degree of silence unusual in modern offices. Features are a mural in coloured Formica—of which Rowan & Boden Limited is sole U.K. marine distributor—and a telephone switchboard which enables outgoing calls to be dialled direct and external and internal calls in each room to be dealt with by a single instrument.

### Mexican engineer's visit to Britain

Sr. Ing. EDMUNDO DE LARREA, Chief of the Technical Department of the National Railways of Mexico, has been visiting Great Britain to see developments particularly in electric and diesel traction in this country. During his 10 days' stay he has been shown installations on the Eastern Region and London Midland Region of British Railways, including on the former the new Stratford diesel depot and on the latter the Manchester-Crewe electrification and the Crewe depot. Sr. Ing. de Larrea has also visited the works of Steel Peech & Tozer Limited in Sheffield, the new traction motor works of Associated Electrical Industries Limited, and the Vulcan Foundry works of the English Electric Co. Ltd. During his stay in Scotland he saw various installations on the Scottish Region and was entertained by the North British Locomotive Co. Ltd. Before he left he was entertained at a dinner, which the Mexican Ambassador also attended, by the Chairman and Members of U.K.R.A.S. and was shown a short film dealing with railway modernisation in this country.

### Rhodesia electrical engineer's visit

MR. R. G. PENTZ, Assistant Electrical Engineer, Rhodesia Railways, who has been staying in this country since September 4, was entertained by U.K.R.A.S. to a cocktail party in London at the beginning of this week. Mr. Pentz has been studying the operation and maintenance of both diesel and electric motive power and has spent a good deal of his time with the Eastern and London Midland Regions as well as seeing the electrified lines and associated works in Scotland. Among the works of industrial companies which he has visited have been those of the Brush Electrical Engineering Co. Ltd. and of Associated Electrical Industries Limited. He has also been to the General Electric Co. Ltd. works at Witton and the traction contracts department at Kirkby of British Insulated Callender's Cables Limited. Both the Vulcan works and Preston works of the English Electric Co. Ltd. were also seen by Mr. Pentz and during his visit to Glasgow he went to the North British Locomotive Co. Ltd. works. He has had

considerable discussions with officers of the electrical and mechanical department of the British Railways and has also seen something of the maintenance and repair of rolling-stock on the London Transport Executive system.

### Limited help for exports

THE September increase in our gold reserves, followed as was only proper by an initial reduction in Bank Rate from 7 to 6½ per cent, shows that things are beginning to move in the right direction. It is clear that world confidence in sterling is being re-established, and that foreigners are willing to lodge money in London. Indeed, as the Bank of England has just pointed out, a heavy inflow of "hot money" from abroad is not to be welcomed.

This is the real meaning of what after all is only a token reduction in Bank Rate. It is a warning to the outside world that we do not want too much of their short-term money, because such money is a most unstable foundation to our economy. It does not mean that we can relax our efforts to overcome internal inflationary tendencies or to expand our exports.

Yet a reduction in Bank Rate from even 7 to 6½ per cent will, to a very limited extent, help our exports. We have already pointed out the close connection between Bank Rate and the cost of financing exports. Even a 6½ per cent Bank Rate, with its attendant overdraft rate of 7½ per cent, will "bite" deeply into small manufacturers.

Whether the credit squeeze should be relaxed and money at home made more plentiful is a very different question, intimately connected with the need to check home inflation. In applying the credit squeeze, bankers naturally find it easier to refuse new loans than to call in existing loans. In any event, the squeeze is directed more towards loans to hire-purchase and property companies and personal borrowers. Exporters continue to get priority, as indeed they should.

Another point, which particularly affects goods sold overseas on medium-term credits, is that bills representing instalments due on these credits within 18 months are rediscountable at the Bank of England. This means that bankers holding such bills can regard them as part of their liquid assets. They therefore escape the credit squeeze and the inroads made by special deposits into the banks' ability to lend.

There is a lesson in this last fact. The time may not be yet ripe to relax the credit squeeze as a whole. But efforts should continue to be made towards a discriminatory form of relaxation, particularly in favour of exporters. For example, could the rediscounting facilities just mentioned be extended? Or could other forms of relaxation be devised? Any form of discrimination always evokes controversy. This does not absolve the Government and everyone in both finance and industry from exploring the ground and doing what they can as a matter of urgency.

The Bank of England estimates that we will need an annual increase of 10 per cent in our exports over the next two or three years, and that this will entail "a comprehensive and aggressive export drive." This will not come of itself. One thing to do is to see what we are up against as regards our overseas competitors. It is true that we adhere to the Berne Convention and that we do not want to take part in a "rat race" of competitive export subsidies. If the race has already started, and if we are at times elbowed off the course, we cannot afford not to elbow back. In this, as in other matters, the Government must adopt a more positive and realistic attitude.

In the United States there are two institutions working with Government funds—the Export-Import Bank and the Development Loan Fund. The former operates on a commercial basis, but the latter is the United States Government Agency for direct operations to provide development finance for other countries. As such, it is, from our point of view, probably the more effective competitor of the two. Unlike the International

Bank, which attaches no "strings" to its loans, the Development Loan Fund could be a real link between foreign countries anxious to embark on new projects and American manufacturers and contractors anxious to supply their needs.

Can we do the same? Despite any American protests that the dollar is not so strong as it was, the American Government's purse is still longer than that of the British Government. For various reasons, many of them good, such aid as our own Government has been extending overseas has been concentrated in a limited number of directions, almost entirely within the Commonwealth. Thus India has had £50 million, and Pakistan and Nigeria have also had substantial sums.

Without denying the strong case for these particular items, could we not spread our aid more widely? In doing so, could we not remember that every time our Government helps to finance British exports in any direction, it strengthens our position in that particular market?

France and Western Germany also have points of interest to us. In Western Germany, in particular, the banks have long been accustomed to taking "participation" in industrial concerns, and these include the holding of industrial equities by the banks. History shows that this has not been without risks. It works very well in times of boom, such as Western Germany has experienced over recent years. We have yet to see how it works in times of depression.

Yet one result is a closer integration between the Government, industry and the banks, than is the case with us. In the long run, our system may be the best. It means that our banks are always liquid, and it is the underlying condition of our rôle as world banker, which is an important source of income to us. Yet this closer integration in France and Germany is, as a matter of day-to-day practice, of assistance to the export trade of these countries. We must recognise that fact today; and even more so, if we join the Common Market.

By contrast, in this country such acts of policy as high interest rates and the credit squeeze have a more detrimental effect upon industry than upon the banks. The whole question of what are the best "economic regulators" needs re-examination, especially as one of the major diseases they are designed to cure is that of insufficient exports.

Three things could be done as an initial move. First, see if sufficient use is made of existing Government machinery, such as the Export Credits Guarantee Department. This will be discussed in a subsequent article. Next, make further reductions in Bank Rate as soon as possible, as a means of reducing export costs. Finally, as a longer-term measure, examine once more the traditional mechanism of the City, to see if it needs further modernisation.

### Railway operating practice

MORE than two decades have passed since a textbook was published on the subject of operating practice on British railways. Fundamental changes during that period, both in outlook and in railway ownership, are such as to render obsolete much that was acceptable before the war, and even to modify what was recognised almost as basic principle in the circumstances then obtaining. It is therefore with pleasure that we record the publication this week by Odhams Press Limited, of an entirely new volume entitled "Railway Operating Practice," by Mr. H. Samuel, Assistant Principal, British Railways School of Transport, Derby (256 pp., plus 29 plates, price 30s.). Although commended in a Foreword by Mr. A. R. Dunbar, O.B.E., Manpower Adviser to the British Transport Commission, it is in no sense an official publication, and the author has permitted himself greater freedom of expression than might have been the case if every word were considered as forming part of a statement of policy. It is a comprehensive and stimulating book. Railway operating is not an exact science, and therefore there may be several different solutions to some operating problem. The method adopted by the

author is to set out the advantages and disadvantages of adopting different courses of action. This enables the reader—principally the railwayman student, for whose specific needs the work has been planned—to reach his own conclusions. Most successful railway operators have been brought up in the empirical school, and few have found time to analyse their own actions. In Mr. Samuel's view, they are apt to attribute their achievements to personal qualities rather than to working to principles, and "some might even believe in their own intuition." Whether or not this view be accepted is immaterial for the present purpose. Criteria do exist, and the author has endeavoured, with considerable success, to define and apply them. Many principles are no less important because they are simple, commonsense, or even obvious. Where a preference is stated for a particular conclusion in the application of principles to problems, the author emphasises that this is his own opinion and does not necessarily represent the policy of British Railways.

Operating techniques are still, and must always be, at the core of the railway business. It is now usual to combine in a railway traffic organisation the formerly separate departments of Commercial, Operating, and Motive Power, and, as Mr. Dunbar says in his Foreword, this change has brought together the policy-making and executive leadership of these functions. It serves to emphasise the net revenue objective by bringing together the responsibility for both traffic receipts and working expenses. It is this enlarged conception of railway operating which has formed the schematic basis of the present volume. After the survey of basic principles, the author discusses track and signalling, rolling-stock, motive power, passenger stations, freight terminals, and marshalling yards. With this background, consideration is given to the working timetable, traffic control, train service structure, punctuality, and the use of statistics. The chapter on statistics as a tool of management, a means to an end and not an end in themselves, is an excellent example of the succinct treatment and clarity of thought which characterises the book. As due regard is paid to changing conditions resulting from large-scale modernisation schemes, and the outlook is commercial rather than doctrinaire—"if you don't need it, get rid of it"—this volume could be a standard work on its subject for many years.

### British experience with 50-cycle traction

BRITISH contributions to d.c. electrification in Brazil date back to 1926, and include substations, locomotives, and motor coaches. The Brazilian Federal Railways Conference last month must therefore have heard with particular interest the account given by Mr. J. A. Broughall, Assistant Chief Electrical Engineer, British Transport Commission, of experience on British Railways to date with the 50-cycle system of electric traction. Mr. Broughall's paper, entitled "Progress of electrification at industrial frequency in Great Britain," was notable for its unbiased presentation of data necessary for forming a balanced view of what may be expected from this form of electrification in individual circumstances. Like the lectures given by Mr. S. B. Warder, the Commission's Chief Electrical Engineer, during his visit to India at the end of 1959, the paper gives practical proof of the readiness of this country to present technical information of interest to railways overseas and to invite discussion. These are two valuable methods of implementing the aims of the United Kingdom Railway Advisory Service. Mr. Broughall did not gloss over the troubles that have been encountered here; neither did he try to offset them by making exaggerated claims for the usefulness of the lessons learned, for these are closely linked with conditions peculiar to Great Britain. Other lessons of wider application have emerged as well, and he emphasised the value of our experience to countries which are interested in the conversion of d.c. lines to high-voltage a.c. He stated that our own conversions from 1,500V. d.c. to 6.25kV. a.c. had been a success and that rolling-stock which has been employed mainly on the Liverpool Street to Shenfield and Southend lines of the

Eastern Region, where such conversion had taken place, had worked over 11 million km. without a transformer failure. The conversion of the 3,000V. d.c. lines which form the bulk of the 1,240 electrified route-miles in Brazil would present no new difficulties, whether electrification at 6.25kV. or even 12.5kV. were chosen. No doubt the choice of these voltages would be influenced by the possibility of retaining existing structures and catenaries with new insulators, as on the Eastern Region. Where the conversion of non-electrified lines was concerned, Mr. Broughall said there would be no hesitation in recommending the 25kV. system.

Although it is only a little over two years since the first 25kV. electric trains began running on British Railways, what may be termed "new generation" motive power is already in evidence. So far this is represented mainly by motor coaches with semiconductor rectifiers. Mr. Broughall reported that rolling-stock equipped in this way had now run nearly five million km. without failure of the rectifier as such. It had not been found necessary to use a short-circuiting switch for rectifier protection, and the freedom from breakdown justifies the cautious policy which had been followed in grading the cells, while confirming the correctness of the choice of numbers and qualities of these elements. Other steps forward were in notchless control by various methods, which was of direct interest to operating departments in that smooth control of traction motor current allowed an effective increase in adhesion of 10 per cent or more, so that a 73-ton locomotive could start the same train as an 80-ton locomotive with conventional tap-changing. In this respect, a.c. traction was improving on its original promise and vindicating the argument that it held most prospect of benefiting from research and development projects now in hand. Other figures quoted by Mr. Broughall gave a timely reminder that excellent standards of reliability have been established by some essential items of traction equipment in service on British Railways. He quoted motors in a.c. locomotives which had run an aggregate of 300,000 km. without a single failure, and others in motor coaches which had aggregated over 2½ million km. with similar freedom from trouble. Since publication of the second interim report on the Glasgow and North-East London train equipment failures, virtually sparkless current collection had been achieved at both 6.25kV. and 25kV. from compound and simple catenary at speeds of 75 to 90 m.p.h. In all respects the mass of experience which had been accumulated promises to make the way ahead easier, and allow concentration on providing the simplest solutions to the problems of 50-cycle traction. These are the solutions which appeal to railway operators in all parts of the world, and the setbacks of the past year will have been turned to good account if they are brought nearer.

### A cast into the future

THERE can be little doubt that railway practice generally is on the threshold of a major advance—one that could alter railways out of recognition except for the steel rails and the loading gauge. Diesel traction and the present modes of electric traction are little more than harbingers of an era. This era will literally be forced on many railway managements because the outstanding technical developments, known as yet only in trial and feeler installations, have a potential far in advance of the financial methods and thought methods in vogue today. Labour outlook, also, has a great retarding effect, though perhaps less than it had, for a problem today is not so much redundancy of staff as difficulty in adequate recruitment. Indeed this is one of the major reasons leading railway managements to take up devices for which their thought, with a few exceptions, is not fully ready.

The use of computers and the experiments with driverless trains are among the more obvious examples, but several more were considered briefly in the paper "Some speculations on the future of railway mechanical engineering," presented by Dr.

F. T. Barwell as the inaugural paper of the Railway Engineering Group of the Institution of Mechanical Engineers. Some of the points he made were summarised in last week's issue. The five lines taken in giving the titular particulars of this paper show in themselves how far down the scale of fragmentation we have all gone today, and how necessary it is to get back to an overall point of view. Happily enough the paper itself shows this. Though at times it dips too far into fragmentation, it is a paper more worthy to be read before managements, as helping them to preserve an overall outlook. Though of use to mechanical engineers, the survey of coming or arrived resources and their possible effects are those which need laying again and again before higher direction and management, so that they may give correct and progressive instructions to engineers—and others. When one is within measurable distance of being able to control whole sections of railways and the trains on them by use of a computer, it is time for railway managements to force the pace, for they cannot look in Western Europe or North America, to Ministers of Transport for adequate higher direction; at that level there is a little more understanding that money-finding is not so difficult as departmental chief officers are encouraged to believe.

### Design and the B.T.C.

**I**N 1956, before an organised design policy was adopted on British Railways, the railways in general, and London Transport in particular, had a long and distinguished record of good design. Reference was made to this fact by Mr. T. H. Summerson, Chairman of the British Transport Commission's Design Panel and of its North Eastern Area Board, when he presented his paper "Design policy for corporate buying" to the International Design Congress in London on October 4 and 5. Mr. Summerson augmented the statements he made in an article in *British Transport Review* to which we referred in our issue of September 1, and stated that, though organised design came late to the B.T.C., it had not come much too late and no great damage had been done. The railways still possessed most of the fine old stations and viaducts from the Victorian era in which they had been born, and their best steam locomotives, although perhaps long in the tooth, were object lessons in dignity, simplicity, and fitness for purpose. Some specialised passenger vehicles, such as the carriages for the East coast expresses and the restaurant cars introduced by the former London Midland & Scottish Railway, were things of which they could be justly proud.

Following the Government's authorisation in 1954 of the railway modernisation plan, the need for better design began to be widely canvassed and, when manufacturers' designs for the first diesel locomotives were not thought to be very satisfactory, it was decided that an organisation for applying good design must be devised and put to work as a matter of urgency. The problem was not an easy one. Its solution involved a good deal of interference with the established provinces of a large number of officers. To add to this, taste in design is a subject on which most people consider themselves experts.

In spite of the difficulties, the Design Panel was set up with membership drawn from the Commission, the design profession, and outside industry. Its objectives were to invest the appearance of equipment with a character appropriate to a public service and to the dignity of the Commission; to project the idea of a keen and progressive management through the appearance of its equipment; to promote the commercial development of the undertaking by the attractiveness of its equipment, and to engender a sense of pride in those who used it. Its terms of reference were to advise generally on the policy to be followed in dealing with design problems, to advise management bodies of the Commission's activities, to obtain professional advice from outside designers, and to promote interest in design among the staff. Matters falling within the proper province of the Commission's Architect and the design of printed matter were excluded from the panel's province.

## LETTERS TO THE EDITOR

THE EDITOR IS NOT RESPONSIBLE FOR THE OPINIONS OF CORRESPONDENTS

### DESIGNERS AND STYLISTS

October 6

SIR, I wonder whether it will be possible to clear up what appears to be a terminological inexactitude in the use of the word "Designer." Years ago, a new railway vehicle, locomotive or otherwise, was described as having been designed by the Chief Mechanical Engineer although most people knew that he had the general idea and supervised operations and that in the end he took the responsibility—but he did not actually design the final product in the precise term of the word. Nationalisation brought more fairness as the words used to describe the process were along the lines "designed to the requirements of" or "under the supervision or guidance of"—which is factual and to the point.

More recently, a new factor seems to have crept in with the appointment of the B.T.C. Design Panel. Now we are told that Mr. X has already designed a number of locomotives or that a good locomotive design has been accomplished by Mr. Y, both gentlemen being advisers on shapes and colour schemes to the Design Panel, or, again, that railcars built by British Railways, Derby, have been designed by the B.T.C. Design Panel.

Modern diesel or electric locomotives or railcars are very complex structures, never designed solely by any one man and, for that matter, they are designed by engineers from the inside outwards and only when the overall parameters are clarified is a consulting stylist invited to round off corners, put in fancy-shape windows, particularly at the sides adjoining the front end, and to advise on colour schemes.

But that is not designing as generally understood, but rather styling of a product. So why not call this type of activity "vehicle styling" rather than designing and thus place credit where credit is due—and in a correct form. Logically, the "Design Panel" is really a misnomer—it should be "Styling Panel" or "Stylists' Panel."

Yours faithfully,  
O. BENDER

Harrow, Middlesex

### RAILWAYS AND THE CLERGY

September 24

SIR, Since joining a railway enthusiasts' society a few years ago, I have been struck by the number of clergymen and other people connected with the Church who are also interested in railways; and indeed by the fact that (as a Derbyshire stationmaster once remarked to me) "railways and churches seem to go together." I should be interested to know if any of your readers can suggest a reason for this phenomenon, and as a starting-point for inquiry, I append a list of points of similarity between the Church of England and British Railways:—

- (1) They both have come to be regarded as an essential part of the British landscape.
- (2) They both possess large quantities of Gothic architecture which (they are constantly reminding us) are very costly to maintain.
- (3) They both enjoyed a heyday of prosperity in the last century, but have now fallen upon harder times.
- (4) They both, however, hope that modernisation will help them out of their present difficulties. And finally,
- (5) They both claim that (notwithstanding the hostility of their critics) they are still the best means of getting people to their destination.

In conclusion, may I just hint at an intriguing possibility: supposing each institution were to take a leaf out of the other's book; what, for instance, if some industrial magnate were appointed Acting Archbishop of Canterbury for five years? Or if the traveller at, say, St. Pancras were confronted with a large collecting box labelled "Take thought for this ancient pile"?

Yours faithfully,  
A. D. F. HOWARD

30, Bailgate,  
Lincoln

### WITHDRAWAL OF SERVICES IN WALES

October 6

SIR, With reference to Mr. J. N. Faulkner's letter in your issue of September 29, it is correct that the overall timings of the diesel services in the Monmouthshire Valleys show only slight improvement on those obtained in pre-war days, but this is due entirely to the many restrictions of speed which have been imposed, for various reasons, over these routes. It should also be noted that, for some years up to 1939, two fast steam express trains ran from Newport to Aberbeeg, leaving Newport at 9.40 a.m. and 7 p.m. These facilities were not continued after the war, because of lack of patronage by the public.

The re-arrangement of the lines in the Newport area has not had the adverse effect on the working of the Valleys' services suggested by Mr. Faulkner and has no bearing on the suggested withdrawal of services.

While it is correct to say that there has been little change in the pattern of services over the Monmouthshire Valleys, the present system lends itself to the most economical operation and has fitted the demands of the present workmen's traffic to several large industries in the area, also school children, and maintains connections with the main-line services at Newport.

Yours faithfully,  
C. J. RIDER,  
Public Relations & Publicity Officer

British Railways, Western Region,  
Paddington, W.2

### THE EUSTON ARCH

October 5

SIR, In view of the large number of us who are deeply concerned over this subject, may I draw attention to the fact that an appeal fund has been organised with the object of preserving this arch.

Donations may be sent to:  
Williams Deacon's Bank, 32, Great Ormond Street,  
W.C.1.

marked "Victorian Society's Euston Preservation Fund."

The fund is understood to be growing encouragingly; may it continue to do so!

We can ill afford to lose this "splendid reminder of our country's leadership in the early Railway Age." It must be saved for posterity.

Yours faithfully,  
J. P. BAWDSLEY,  
Secretary.

Royal Commonwealth Society,  
Northumberland Avenue, W.C.2

# The Scrap Heap

## Always a gentleman

An elderly lady, weary straphanging in the London Underground the other day was revived by the old world courtesy of the young man sitting near her. "Cheer up ducks," he said, "you should get a seat after the next station."—From the "Evening Standard."

## Crustation

Passengers on the 10.8 a.m. through train to Kings Lynn from Wells-on-Sea, sometimes find they have to change at Dereham when there is a large load of locally caught whelks aboard, which have to be delivered to Norwich.

Some passengers have complained to British Railways that the whelks get more consideration than they do, for sooner than shift the whelks to a Norwich-bound train, the station staff shift the passengers.

A British Railways spokesman explained that "It was felt it was easier to ask the passengers to move than shift the whelks."—From the "Daily Express."

## Fiscal cycle

When a coal wagon fell on its side in a remote part of Gloucestershire last week, it blocked the line and caused a two-hour delay to a London express. This meant that the expected intake from 200 provincial branches did not arrive in the morning post at the Westminster Bank head office. Clearing banks estimate their monetary needs on a day-to-day

basis taking into account cash, cheques, orders, and securities passing between branch and head offices. The Westminster Bank therefore found itself seriously short of cash and sent out an emergency call which raised £18 million within minutes. The money market then had to keep itself afloat and, to stabilise matters, the Bank of England bought treasury bills to release money into circulation. During the day the missing mailbags began to arrive and the £18 million found its way back to the money market.

## Safe driving awards

Nearly 12,000 London Transport drivers qualified in 1960 for awards made by the Road Operators' Safety Council. The highest award, a 39-year bar to the Silver Cross, was gained by a 61-year-old lorry driver, of the Chiswick lorry depot. Bars for 38 years of safe driving have been gained by three bus drivers, and eight bus and one trolleybus driver have qualified for 37-year bars. In all, 40 drivers have qualified for awards for 35 years or more of safe driving.

## Modern Bob Cratchit

A far cry from the quill pen and abacus of the days of Charles Dickens were the exhibits at the Electronic Computer Exhibition which has just ended at Olympia. The first visitor when this exhibition opened was dressed as a clerk of the Dickensian period, and was greeted



19th century clerk at computer exhibition

by Lord Brabazon of Tara. The illustration above shows the anachronistic visitor being shown a computer.

## Model locomotive

The illustration shows Mr. C. P. Allen (right), a Director of Imperial Chemical Industries Limited and President of Canadian Industries Limited, presenting a model of Canadian National Railways locomotive No. 6100 to Dr. R. V. V. Nicholls, President of the Canadian Railways Historical Association. This model stood in the window of the C.N.R. London office before being given to Mr. Allen.

## Fair comment

Mr. Gordon Maxwell, London Transport operations manager, has been looking at the New York subway.

His view: "The pushing and shoving here is rather more hefty during the rush-hour—but on the whole, I think, better organised."—From the "Daily Express."

## Most perishable commodity

Transport is the most perishable of commodities—what we sell has gone for ever if it is not bought and used on the day and at the hour we provide it.—*Mr. James Amos in his Presidential Address to the Institute of Transport.*

## Equine exit

The last two "shunt" horses, *Charlie* and *Mary*, employed by the Eastern Region of British Railways, have been retired from Diss Station, Norfolk, according to *The Evening News*. The sidings at Diss have been modernised to take shunting locomotives.



Model of C.N.R. Locomotive No. 6100

# OVERSEAS RAILWAY AFFAIRS

FROM OUR CORRESPONDENTS

## UNITED STATES

### Proposed rapid-transit system for Atlanta

Between 1950 and 1960 the population of the city of Atlanta in Georgia, U.S.A., increased by more than 44 per cent and is now over a million. To serve so great and rapidly growing a centre it is proposed to establish a rapid-transit system initially with 32 stations and a route-mileage of 60 miles, but in its second stage 97 route-miles. The city is already served by seven major railways with lines radiating in all directions from its centre. The intention is to use these lines almost exclusively, and to construct only two short lengths of new railway. Overall scheduled speeds of 45 m.p.h. including stops are planned for lightweight electric multiple units, air-conditioned and automatically controlled. The recommended outlay is over £70 million.

## COLOMBIA

### Bogota-Santa Marta line opened

The Atlantic Railway connecting Bogota, the capital, with the seaport of Santa Marta was officially opened for traffic in July. The passenger service is

worked with two fast twin-diesel units of Swedish build each way daily, the journey taking about 17 hr. Goods traffic is handled by American diesel locomotives, the scheduled time being about 24 hr. A commission of experts has also recommended the construction of a connection to the port of Barranquilla. The Government policy appears to be to build roads as feeders to the railway.

## RHODESIA

### £108,000 to develop sugar traffic

Rhodesia Railways' railway and road services are together to spend £108,000 in connection with a recent agreement with Triangle Estates to move bulk sugar from that undertaking's mills to Mbizi station and onwards by rail. Mbizi is on the Somabula Junction-Lourenco Marques main line about 75 miles short of the Mozambique frontier. At that station a new water supply, additional staff quarters and station buildings, and trackwork with land will cost about £70,000. Special lorries similar to those used for carrying lithium ore in the Fort Victoria area have been purchased to bring the sugar from the mill. They

## SOUTH AFRICAN VIADUCT



Viaduct on the Van Reenen deviation, described in our issue of September 22

are long eight-wheelers with six-wheel trailers.

## EAST AFRICA

### Six-berth second class compartments

On August 15, second-class six-berth accommodation in coaches was introduced experimentally on certain East African Railways & Harbours' trains. This is the first step towards reducing the cost of second-class travel. So far, eight of these coaches, with 33 berths in each, have arrived from England and one 36-berth coach has been converted in the railway workshops, where also the others will be converted. If these services are successful, this six-berth accommodation will be standard throughout the system. The locally-converted coaches will have six six-berth compartments, but those imported from England have one three-berth compartment, two sets of three-berth compartments with communicating doors, and three six-berth compartments.

## TANGANYIKA

### Progress on Central-to-Tanga lines link

Permanent way rail-laying is now in hand on the construction of the 120-mile link to connect the Central and Tanga lines. By the end of May nine miles of track had been laid.

## SOUTH AFRICA

### Rolling stock changes in South Africa

During the second quarter (April-June) of 1961, the following locomotives and rolling stock were placed in service. 12 Class "5E1" electric and 13 Class "32" diesel-electric locomotives, the former built by Associated Electrical Industries Limited in the United Kingdom, and the diesels by International General Electric Corporation in the U.S.A. 51 suburban electric coaches, 10 third-class all-steel main-line saloons, and 5 staff coaches were delivered by the Union Carriage & Wagon Company of Nigel, Transvaal. 24 passenger-brakevans were also received from West Germany. The number of wagons put into traffic was 1,283 together with 129 goods brakevans. 24 locomotives, 22 coaches and 633 goods vehicles were withdrawn from service for scrapping.

# ELECTRIC CRANES AT CANNING TOWN in the Eastern Region

BY IMPROVING the wharfside facilities at Canning Town, the Eastern Region of British Railways is meeting the needs of waterborne cargo traffic on London's rivers. Recently, two rail-travelling electric cranes began handling barge and ship cargoes—most of which are despatched by rail. Earlier this year the Region carried out similar modernisation work at the nearby Blackwall wharf.

Blackwall and Canning Town wharves are situated on Bow Creek and are served by the nearby Temple Mills marshalling yard which operates express-freight trains daily to and from all parts of the country. All import and export goods, including timber, grain, sugar, iron and steel, cased and cartoned merchandise, can be handled quickly and there are first-class facilities for the reception of up to 16 barges or vessels to a laden weight of 750 tons.

## Level-luffing cranes

The two cranes at Canning Town are electrically operated of the level-luffing type, mounted on a 4-ft. 8½-in. gauge track. They have a capacity of 2 tons for general cargo duties within a radius of 40 ft. to 17 ft. 6 in. and a special duty of 6 tons at 17 ft. 6 in. rad. A height of lift of 54 ft. is available, 38 ft. above rail level and 16 ft. below.

The cranes are mounted on four single flanged wheels which are rigidly fixed to their axles, all wheels being driven.

The chassis and gantry are constructed of plate forming enclosed sections, the chassis portion enclosing ballast.

The superstructure is mounted on a live ring of adjustable conical-steel rollers and a centre column through which pass the incoming electricity supply cables.

The superstructure base is formed of rolled-steel sections rigidly braced, on which is located the hoist, luffing, and slewing machinery, together with the associated control gear. The cladding of the machinery house is wood with large double doors opening at the rear to allow for any machinery to be lowered to ground level. A small hand-operated chain block is provided in the machinery house for maintenance and the runway upon which the chain block travels covers the whole of the machinery area. A driver's cab is situated at the left-hand corner of the superstructure.

The "A" frame is constructed from rolled-steel sections mounted on the machinery base and the pulleys which are fitted to the apex are of cast steel, running in roller bearings. An audible and visual

safe load indicator is fitted into the "A" frame for giving audible and visual warning to the driver should he attempt to lift any load which is outside the safe working capacity of the crane.

The 50-ft. centre jib is fitted with cast-steel jib-head pulleys running in roller bearings and a ladder complete with jib-head platform is provided for inspection purposes.

## The hoist unit

The hoist unit consists of a 55-b.h.p. electric motor driving through a flexible coupling, totally-enclosed spur gearing running in oil, to the cast-iron spirally grooved hoist barrel upon which is coiled the wire rope. An electro-magnetic brake is fitted and a mechanically-operated foot brake is also provided. A change-speed gear is incorporated in the spur gearing which is interlocked with the safe-load indicator for changing from the 2-ton position to the 6-ton special duty position. The interlocking is such that should the operator attempt to lift the 6-ton load in any position but the minimum radius of 17 ft. 6 in., the hoist contactor will not make until the jib has been luffed into the required position. The hoist rope is of 6 x 37 construction and is fitted with a bobweight and Liverpool-type hook. The hoist speed is 300 ft. per min. for 2 tons and 100 ft. per min. for 6 tons.

The luffing unit consists of a 10-b.h.p.

## Improved wharfside facilities for handling barge and ship cargoes

electric motor driving through the flexible coupling to a totally-enclosed worm-reduction unit to the spiral-groove cast-iron wire-rope barrel which is grooved to take two 6 x 37 construction ropes. An electro-magnetic brake is fitted and a mechanically-operated hand-brake is also provided. The luffing speed is 60 ft. per min.

The slewing unit consists of a 10-b.h.p. electrically-operated motor driving through the fluid coupling to a totally enclosed worm-reduction unit, incorporating a slipping clutch, through to the driving pinion which engages on the slew rack. The slew rack forms an integral part of the roller path and consists of bright-steel pins secured at their uppermost end by keep plates. An electro-magnetic brake is fitted and also a foot-operated mechanical brake which can be locked in position. The slewing speed is 2 r.p.m.

## Manufacturers

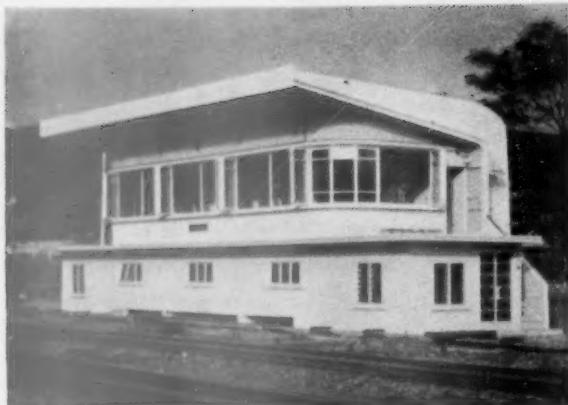
The control gear together with the crane protective panel was manufactured by Allen West & Co. Ltd., all motors by Lancashire Dynamo & Crypto Limited, and brakes by Elliston Evans & Jackson Limited. The cranes were manufactured and erected by Stothert & Pitt Limited to the specification of Mr. T. C. B. Miller, Chief Mechanical & Electrical Engineer, British Railways, Eastern Region.



Crane loading cargo into rail wagons



Crane discharging cargo from barges



Kuala Lumpur South signal cabin



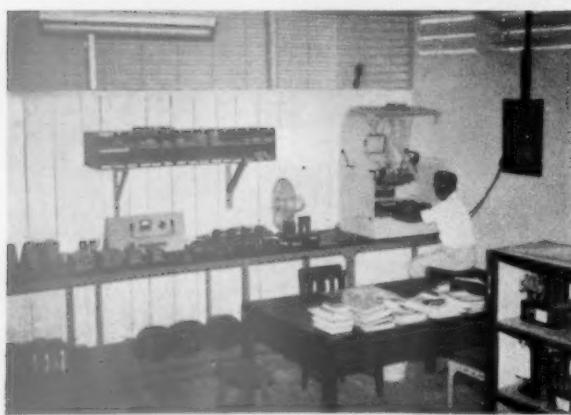
Control room at airport



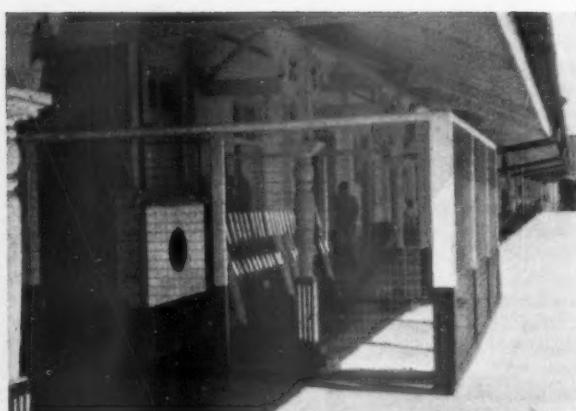
Two-aspect colour-light distant signal



Gemas North signal cabin



Part of signal-servicing depot



Seremban Station lever frame

## SIGNALLING DEVELOPMENT on the Malayan Railway

DURING 1956, several modernisation projects were initiated on the Malayan Railway to increase speeds, provide additional haulage facilities and augment line capacity with the object of increasing revenue and reducing operating costs. One scheme was the installation of centralised traffic control in two stages—from Gemas to Kluang and from Gemas to Tampin on the main line between Kuala Lumpur and Singapore. Extensions were envisaged later. This area was selected for two reasons: first because several of the stations in the southern section of the main line were still non-interlocked, involving sub-standard working which made necessary severe speed restrictions; second, to effect staff economies in the area heavily worked for crossing purposes.

### Level crossing protection

Another scheme proposed at the same time, partly in conjunction with centralised traffic control but partly also in other areas, was automatic protection for level crossings. The object of this was to reduce high capital and maintenance costs of the existing standard heavy-type mechanically interlocked gates and the annual recurrent expenditure of gatemen. The automatic protection was to take the form of flashing lights and warning bells at minor roads, supplemented with half barriers on busy routes and within station limits.

Because of the trade recession early in 1958, which resulted in an adverse trading balance, the Malayan Railway was compelled to abandon almost all new projects. In particular, centralised traffic control and automatic level crossing protection were cancelled despite the fact that orders had been placed.

### Partial interlocking

To eliminate sub-standard working and to reduce speed restrictions at non-interlocked stations, an interim measure, known as partial interlocking, was introduced at the majority of stations concerned. This signalling is simple and comparatively inexpensive; it involves mainly the application of mechanical facing point locks in the main line and the use of routing signals.

Some essential renewals were proceeded with to retain full safety conditions. In June, 1959, a new signal cabin at Kuala Lumpur South was brought into use. This cabin was equipped with an 80-lever mechanical frame and colour-light signalling was introduced in two stages on the running lines. All controls were

effected from the lever frame; point and shunt signals remained mechanically operated. Fully-controlled block working on the Up and Down lines was brought into use at the same time.

### Airport warning system

A further major renewal scheme was undertaken in 1960, the building and equipping of a signal cabin at Gemas North, at the junction of the East Coast line from the main. This was fitted with a 56-lever mechanical frame but no signalling or track alterations were involved.

The warning system at Kuala Lumpur International Airport, brought into service in September, 1958, is of unusual interest. Immediately to the west of the runway, the railway main line from Kuala Lumpur to Singapore is mounted on an embankment some 10 ft. above the ground level. Trains passing along this section of the line are a danger to aircraft. The Director of Civil Aviation approached the railway administration to provide a warning system whereby his control officers could be acquainted with the approach of trains towards the runway, enabling them to take appropriate action particularly in cases of emergency. The system, operated by directional track circuits, is based on audible and visual indications being given to the airport control room as any train passes a point two miles from the runway; the audible indication is a bell of about 4 sec. duration while simultaneously a visual indication is set up on an illuminated diagram and maintained until the train passes the runway. A further audible warning by buzzer lasting about six sec. is given as the approaching train passes a point one mile away from the runway.

### Complications involved

An emergency telephone is provided between the airport control room and the nearest signal cabin, but no lineside signals are involved. The system is complicated by the fact that all trains do not run through; shunting, crossing and branch-line traffic are involved at a junction south of the airport. Any train approaching from the south causes normal warnings to be given, but these are cancelled manually by the signalman should it not be proceeding towards the

### Improved warning systems bring added safety and economy

runway; for trains starting from the junction northwards past the airport, the visual indication together with both audible warnings are given at one and the same time. Because of shunting operations at the opposite end of the section, provision also had to be made for trains running up to the shunt limit. Although not proceeding through the section, these trains operate the warning system, but after shunting has been completed, the warning can be cancelled manually by a time release. Conventional signalling apparatus was used throughout this scheme.

### Road and rail movements

Another scheme of unusual application is the control of both rail and road movements across a railway bridge. The signalling, installed in 1960 at Guille-mard Bridge spanning the Kelantan River, provides mid-block section control and full safety for working either type of traffic. The fundamental and essential feature of the system is a compulsory physical patrol of the bridge by the supervisor in charge before opening for rail traffic after the passage of road vehicles. The bridge, which is 2,000 ft. long, carries a single railway line on the East Coast route and is decked for road traffic in one direction at a time.

### Full interlocking

Interlocking with fixed rail and road signals is provided and manned by a supervisor at one end and a gateman at the other. The project is in pursuance of the Federal Government's priority programme for rural development, giving road facilities without the high capital cost of building a separate bridge.

An important communication facility brought into use during this period (December, 1958) is a new control telephone on the East Coast line between Gemas and Kuala Lipis, over a distance of 142 miles. The apparatus is the G.E.C. two-digit dial type, and consists of the control, situated at Gemas, and 16 wayside station sets. Inter-station calling as well as conference facilities are provided.

The severe economic measures applied throughout the Malayan Railway system have been effective in substantially

*Continued on page 423*



*Aerial view of site of proposed marshalling yard, showing diverted river Calder*

## THE ESTATE & RATING SURVEYOR in relation to modernisation

THE basic requirement of any railway system is land on which to lay down the track and on which to build goods and marshalling yards, stations, and depots. Railways are necessarily big landowners and their Estate Managers are concerned in any scheme of modernisation involving changes in land ownership or occupation.

Many railway installations cover large areas, typical examples being the four new marshalling yards being constructed in the North Eastern Region at Newport, Lamesley, Healey Mills, and Stourton.

### Early foresight

At Newport the Region was fortunate, because of the foresight of its predecessors. The commission already owned much of the land needed for the new yard required to deal with the expanding traffics of Tees-side industrial development, but 40 acres of additional land had to be purchased for the project, and for the

**In addition to its primary task of acquiring and disposing of land, the department gives valuable advice on reconstruction projects**

*by G. H. DEAN, Head of Town Planning & Parliamentary Section, Estate & Rating Surveyor's Department, British Railways, North Eastern Region, York*

recently completed motive power depot adjoining. Elsewhere the position was not so advantageous, and for the yard to deal with Tyneside and Wearside traffic it was necessary to acquire 103 acres at Lamesley on the east coast main line south of Newcastle-upon-Tyne.

Rationalisation of the numerous small marshalling yards of the formerly-competing railway companies in the West Riding involves the provision of the two new yards, and extensive areas of undeveloped land adjoining railways are

difficult to find anywhere in such busy industrial localities. The West Riding is a country of hills and dales, with a scarcity of flat land. The combination of these difficulties, coupled with the problem of satisfying the Town & Country Planning Authorities, was nevertheless overcome, and sites of 125 acres at Healey Mills near Dewsbury, and 70 acres at Stourton, near Leeds, were located and are being acquired.

The Healey Mills scheme presented special difficulties arising out of the need

to carry out a major diversion of the river Calder, the course of which ran across the site of the proposed yard. Land-treatment works for sewage disposal adjoined the river within the area to be purchased, and other means of disposal had to be arranged by the Local Authority. The existence of a large private reservoir within the area to be purchased, serving adjoining mill premises, necessitated the provision of alternative water-supply arrangements. The associated valuation problems were further complicated by the fact that much of the land required is gravel-bearing.

#### Main-line widening and improvement

The programme of track strengthening and improvements for high-speed running and other modernisation works of the permanent way calls for the services of the Estate & Rating Surveyor to carry out, in addition to purchases of land, negotiations with adjoining owners and occupiers in the many cases which affect private level crossings, underbridges, and overbridges. The aim, which is often achieved, is to persuade users to agree to the abandonment of their rights, enabling the crossings and bridges to be removed as the alternative to expensive reconstruction.

Improvement of clearances at public road bridges, frequently associated with bridge and approach road-widening schemes, involves negotiations for sale and purchase of land and, grant of easements to highway authorities.

Widening of the east coast main line north of York between Alne and Pilmoor required the acquisition of a strip of land 4½-miles long. The total area needed was 14 acres, involving 16 separate purchases.

#### Town planning

It is widely known that the Town & Country Planning Act 1947, introduced, among other things, the present system for the control by planning authorities of the development of land. Not so generally known is the fact that this Act also allowed for the making of general development orders, and under such an Order issued in 1950 certain operations and uses of land may be carried out without planning permission.

Such grants of general permission to develop railway operational land are far from absolute since an objecting Local Authority could seek confirmation of a restrictive direction, but they do serve to ensure that the progress of certain modernisation works are not seriously impeded by planning controls.

#### Parliamentary powers

In the case of major projects, such as marshalling yards, it is necessary to obtain Parliamentary powers to carry out the works and to acquire compulsorily the property required for the scheme. Such

powers are sought by inclusion of appropriate provisions in a Parliamentary Bill, and the Estate & Rating Department is closely concerned with its preparation in conjunction with the Chief Solicitor and the Chief Civil Engineer.

There are prior consultations with local and public authorities affected, every effort being made to co-operate with them and to conciliate owners and occupiers likely to be affected. Matters of this sort call for patient negotiations with numerous parties—whose only common ground is, understandably, the wish to be left in undisturbed possession of their property—with the background knowledge of works-programme starting dates which must be met if the planned economies are to be achieved at the earliest possible time.

In all cases where property to be acquired is not owner-occupied there are separate negotiations for the settlement of lessees' and tenants' compensation claims. To comply with the dates specified by the Chief Civil Engineer, it is frequently the case that early possession is needed, and this may involve payments for loss of occupiers' anticipated profits and loss of agricultural crops already sown but not harvested.

#### Station reconstruction

Where stations are located on valuable central sites it is possible for the Estate & Rating Surveyor's specialised knowledge to make a direct contribution towards railway modernisation.

An outstanding example in the North Eastern Region is provided at Sunderland where the existing passenger station is in the city's main shopping centre, and in conjunction with the Traffic and Chief Civil Engineer's Departments it has been possible to plan station reconstruction in such a way as to release valuable sites for shop and office development. The income to be derived from the granting of leases for these property developments has provided financial justification for the station.

In all schemes of station reconstruction the opportunity is taken of incorporating adequate bookstalls, kiosks, and automatic machines which, in addition to satisfying passengers' needs for newspapers, books, sweets, cigarettes, and tobacco, provide British Railways with valuable rental revenue.

#### Wide range of matters

Two interesting, but entirely different, schemes under the modernisation plan give an idea of the wide range of matters with which the Department is concerned.

The first is the opening out of Corbridge Tunnel on the Newcastle & Carlisle Branch Railway. About 8 acres of land were required to accommodate the deep cutting planned to take the place of the old tunnel, but it was decided to purchase an additional 40 acres of land

from the same owner. Access to the land by its original owner was obtained over the top of the tunnel and once it was removed it would have been necessary to provide him with an expensive accommodation bridge. The Region sold the additional land acquired to an adjoining owner, who could obtain access from his own property, and it was possible to save the cost which would otherwise have been incurred in constructing a bridge. This case is also of interest because the spoil excavated for the cutting is being used as filling material for the marshalling yard at Lamesley.

The second, contrasting, scheme is the proposed micro-wave radio-telephone link between York, Darlington, and Newcastle, described in "The Railway Gazette" issue of August 4. In addition to the Parliamentary and Town Planning aspects, the Department was concerned with the purchase of sites, on high ground remote from the railway, for two intermediate repeater stations with associated towers up to 150-ft. tall.

#### Dwelling houses

The Department has its domestic modernisation problems, for there are more than 7,000 railway-owned houses in the North Eastern Region, many of which fall short of the requirements of present-day living standards.

The modernisation of functional houses such as those occupied by station-masters and level-crossing keepers is being given priority, and a five-year outline programme has been drawn up, which will cost £250,000 to complete. In doing work of this nature, advantage is taken of the various grants which are obtainable from local authorities, although compliance with the requisite formalities tends to retard progress.

#### Branch lines

Responsibility for nearly 300 miles of branch lines in the North Eastern Region, which have been closed, devolves upon the Estate & Rating Department and it is not difficult to visualise the problem of attempting to dispose of these long but relatively thin strips of land, usually in sparsely-populated areas and without road access. In spite of the problem of finding qualified staff to allocate to the work, 60 miles of disused lines have been sold in the Region during the past few years, and efforts are continuing to dispose of as much as possible of the remainder.

One of the consequences of the modernisation plan is the release of land and buildings no longer needed for operational purposes, which it is possible to sell or put to alternative revenue-earning uses by granting leases to industrial and commercial interests and property developers. This is a field of great activity at the present time, and will increase further as the modernisation plan progresses.

## L.T.E. AND PARIS METRO charges and practice

THE 1960 annual review of London Transport's activities includes a conclusion with which few will quarrel—"... improvements to the Underground system done in the right way and at the right places, which will make journeys quicker and easier, are certain to lead to an increase in Underground traffic and a corresponding reduction in the traffic seeking to use road vehicles."

By improvements the authors were thinking, obviously, of civil engineering works and of the provision of better rolling stock, but it is worth considering whether a simplification of the fare structure might not also result, if not in quicker at least in easier journeys, and at the same time produce substantial economies in operating procedure. Although the figures and speculations in this article relate only to London and Paris, they might well be studied by the British Transport Commission in relation to commuting traffic in other large conurbations.

### Queues for tickets

Every morning at suburban Underground stations, long queues of passengers wait to buy tickets ranging in price from 3d. to 1s. 9d. (single), keeping at least two skilled booking clerks at full stretch. At the barrier one ticket collector oversees the rush towards the platform; he is, I estimate, less than half as effective as the Ancient Mariner, for on average he stoppeth one in seven to punch a ticket. At the West End stations three or four collectors take in tickets, no attention at all being paid to whether or not they have been punched.

In the evening the reverse procedure obtains—the collectors at the West End stand back impassive as the crowd starts its homeward journey; one in 20 would be a generous estimate for the number of tickets inspected and punched at this stage. Finally, a ticket must be produced at the suburban station on leaving the Underground system for another day.

### Ineffective checking

The first point I would like to make is that an unnecessary and ineffective attempt is made to check tickets both on entering and leaving the system. The only plausible reason for this procedure can be that it prevents passengers using the same ticket twice, but in fact the real danger (as can be judged from reading accounts of prosecutions in the London courts) is that passengers will not buy a ticket at all and will then claim to have

travelled a shorter distance when paying cash at the end of the journey. The mere presence of a ticket collector at the entrance to the system need deter no one with fraud in mind, for the chances of his being stopped at this stage are remote.

### Standard charge

On the Paris underground, the Métropolitain, there is a standard charge for any single journey on the system, except the Ligne de Sceaux, no matter how far or on how many different lines one travels, and an attractive saving is offered on a "carnet" of 10 tickets. In other words, by buying a couple of these carnets at any convenient time—at off-peak hours when booking offices are slack—the passenger can equip himself both for his daily commuting and for any other journeys he may take on business or pleasure during the course of a week.

The Paris carnet has several advantages over the conventional season ticket. Unlike the season it covers *all* journeys on the system, not just a set daily journey between specified points. It can be used up entirely at the passenger's own needs for it bears no date. In being undated it is also superior to the ordinary London Transport single and return tickets which must, for some mysterious reason, be used only on the day of issue (or on the following day, in the case of return tickets).

### Difference in rolling-stock

Are the railway systems of the two great capitals really comparable? At first glance the English traveller often finds something vaguely antiquated about the Paris Metro; the rolling stock has an upright, clerestoried look to it (the majority of the cars still in use were built before 1933), the internal fittings are by no means luxurious, and there are actually handles on the doors which the passengers have to open themselves—they are closed by remote control from the guard's compartment. Trains are still divided into first and second class, a practice which London Transport gave up years ago, and the tunnels, instead of being deep tubes, are most usually broad

### Comparison of fare structures and methods of passenger working

(by a correspondent)

twin-track roads close to the surface.

Nevertheless the R.A.T.P. (Regie Autonome des Transports Parisiens) has stolen more than one march on the L.T.E. It already has 76 cars fitted with pneumatic tyres operating on one line, and the low "swish" with which they enter a station would be sweet music to any hardened Central Line commuter. At some stations escalators are activated by electronic eyes to start moving only when a passenger approaches.

The Paris system is admittedly much smaller than that of London, and serves a smaller population (approximately 6½ million against 10 million). London Transport trains run over 253 miles of track, Metro. trains over only 117 miles (189 km), including the suburban Ligne de Sceaux, which is treated somewhat differently from the rest of the system. London Transport's total staff (for trains, buses and trolley-buses) exceeds 75,000, whereas Paris manages with only 35,000; a great part of this difference must be accounted for by the vast difference in the number of road vehicles operated—7,500 in London against 3,000 in Paris.

### Better use of stock

Total number of stations served (278 in London, 261 in Paris) and carriages in use (4,150-2,900) are not radically different, and the total number of passengers carried in a year is actually very much higher in Paris (1,160 million) than in London (674 million). It therefore follows that the average length of journey in Paris (3·3 miles) is notably less than in London (4·5 miles). It must also follow that Paris is making better use of its rolling stock, since each carriage is carrying a daily average of 1,864 passengers, against less than 500 in London. This in turn may possibly be due to the fact that Paris manages to pack more people into the same space (although in theory at least the capacity of a carriage is much the same in both cities—about 140), but it must also be accounted for in part by more even use of the stock throughout the day.

How much do Parisians pay for their average journey of 3·3 miles which would, incidentally, cost them about 8d. at,

London Transport's prevailing prices? Single journeys, of any length, cost 0·85 fr. (1s. 3d.) first class and 0·55 fr. (9½d.) second class. These fares are so obviously extortionate that few people, certainly few native Parisians, can pay them.

Apart from the "cartes hebdomadières" at 3 fr. (4s. 4d.), which are in effect weekly season tickets covering six outward and six return journeys, the cheapest and simplest method of fare-paying is by the "carnet" of 10 individual tickets, the cost of which is 5·6 fr. (*i.e.*, 0·56 fr., or 9½d. each journey) first class, and 3·7 fr. (0·37 fr., or 6d. each journey) second class. Admittedly even 6d. sounds a good deal if it is considered as a minimum fare—it is exactly double the present minimum fare in London—but this is misleading. The main points are the average fare and the convenience of the system.

#### Average fare

Taking 1,160 million as a round figure for total passenger journeys on the Metro during a year and £22 million as the figure for receipts in the same period, the average fare per passenger journey works out at about 5d. This figure is depressed below the apparent minimum fare quoted above by the numbers of children on school tickets, holders of "cartes hebdomadières," war-wounded, blind persons and others who qualify for specially reduced fares. It is obvious that to obtain an average fare at this level very few people can be paying above the 6d. second class carnét fare, which confirms the view of its popularity.

In London the corresponding average fare works out at just over 9d. and this is also, reasonably enough, the fare corresponding to the average mileage/passenger journey—4·75.

What of the superior convenience of the Metro system? Could the economies in operation and in accounting made possible by a standard fare reduce the average fare sufficiently to make it attractive to a greater number of passengers than use the Underground already?

At present some 41 per cent of all passengers travel the minimum distance and pay the minimum fare of 3d. Obviously to introduce a single standard fare greatly above this figure would be psychologically and politically unwise, even though there can be few passengers who travel solely at the minimum fare throughout the course of a year.

The economies effected by the change would start with printing costs, and the ticket machines that are now required to deal with a variety of fares could instead issue the one standard fare but accept between them a wider variety of coins. This, plus a system of "ticket books" for 10 or more journeys, would then substantially reduce the pressure on the ticket offices and so help to reduce the numbers of staff needed to man them.

#### Double inspection unjustified

With a single standard fare and no date stamped on the tickets to be checked, there could be no justification for the double inspection at entry and exit which is all but useless. The Paris system of punching the tickets on entry to the system could be adopted, but since Londoners are already used to producing tickets on arrival this could be made the invariable rule and access to platforms should be completely unrestricted. It would be possible to get on the train without a ticket (which a good many people do now) but not to get off the station at the other end. This, too, could lead to reductions in staff.

These savings are unlikely to be sufficient to lead to a single standard fare at Paris level, although it would be interesting to know whether the L.T.E. has ever gone into the possibility in detail. A more drastic reorganisation would be needed, and by this is meant standardisation of tickets on both road and rail and their complete inter-availability.

#### Transferable tickets

London's buses cover a wider area and carry more than three times as many passengers in the course of a year. Paris buses have a standard fare (just over 3d.) for each section of a journey, and passengers give up a number of identical tickets from a carnét according to the distance they wish to travel. Some adaptation of this could be used on London's red central buses with the further refinement of being able to use the same ticket for one single journey on the Underground or for one stage in the bus.

Green "country" buses, Green Line coaches and possibly one or two of the lengthier Underground lines (such as the Metropolitan branch to Aylesbury) could be excluded from this system because they cover distances out of all comparison with the Paris system.

Although this subject obviously needs most careful and thorough research on the part of the London Transport Executive before any such change could be contemplated, there is one final figure which gives at least a grain of hope for the single standard fare in London. This is the average receipt per passenger journey paid by every man, woman and child on London's trains and buses (including the long distance Green Line coaches). The figure for 1960 works out at a little over 6d.

### Signalling Development on the Malayan Railways

Concluded from page 419

reducing operating costs. There has been no restriction on essential expenditure where safety is involved. Signalling renewals have continued to benefit from the use of modern apparatus such as detachable tops, plug-in relays, and upper quadrant signals.

#### Signal servicing depot

Additionally a new Signal Servicing Depot was brought into service in 1959, and is now capable of handling all electrical signalling apparatus used on the Malayan Railway system, a development which has contributed greatly to the maintenance of the high standard of safety. The use of p.v.c. insulated cables for signalling circuits, made in Malaya by a pioneer industry, has also been initiated.

Dieselisation of motive power has been instrumental not only in economising in running costs but also has brought benefits of increased train loading and higher speeds. As part of the modernisation programme it was realised that to obtain full operating advantage from this form of traction at interlocked stations where fast through running is scheduled, an improvement to the outer/warner system of signalling was highly desirable. Consequently, the warner signals were dispensed with and replaced with colour-light distant signals.

#### New type of signal

This type of signal, which is a completely new one to the Malayan system, has been installed at many of the fully interlocked stations between Kuala Lumpur and Singapore; it was designed and manufactured in Malaya, the only item obtained from overseas being the lamp units, which are of the separate

type for each aspect. The signals are approach lit by track circuits. Opportunity has been taken at the same time to associate the controls of these signals with interlocked level-crossing gates situated within station limits, thereby giving drivers advance knowledge of their position where previously the fixed warner signal caused a speed restriction.

#### Emphasis on economy

With the emphasis on economy, some small signalling schemes have been completed; in the main these consist of closing signal cabins where they existed at each end of a station and conversion of the installation into the "wayside" type worked from a central ground frame under the charge of the stationmaster. Such schemes are at Seremban and Taiping. One of the major new works which has been authorised is the construction of a new mechanical signalling workshop.

## BULK CEMENT AND BITUMEN WAGONS in New Zealand

IN THE last two years New Zealand Railways have fitted a number of conventional "Ub" class platform wagons with various types of containers for the conveyance of bulk cement. The first three of these new wagons, classified "Ubc," were supplied in 1959 to the New Zealand Cement Co. Ltd., for service between its private siding at Westport and South Island stations. Four 7-ton capacity containers, made by a Swedish firm, were fitted to each wagon. The containers are gravity-fed from silos and discharged by air pressure from below.

During 1960 another design of "Ubc" wagon was supplied to the Milburn Lime & Cement Co. Ltd., of Dunedin. Three "Ub" wagons were each equipped with two twin 12-ton capacity containers manufactured in Petone for Pneutra Limited, company that has the sole manufacturing rights in New Zealand for the German company of Klinger.

### Discharged by air pressure

In the North Island, four "Ubc" wagons are being adapted for general bulk cement traffic, two being already in service. Each is fitted with four 7-ton containers of an English design. Discharge by air pressure is at the rate of about one ton a minute. The air compressor is driven by a petrol engine mounted on the wagon.

To overcome handling problems and to make more economic use of shipping space, several 5,600-gal. "Uc" class

Various types of bogie wagon designed for the bulk conveyance of cement and bitumen



28-ton capacity "Ubc" class bulk cement wagon for the New Zealand Cement Co. Ltd.



24-ton capacity "Ubc" class cement wagon for the Milburn Lime & Cement Co. Ltd.

tank-wagons owned by a group of oil companies were recently altered to suit

the requirements of traffic. The conversion was carried out by the New Zealand engineering company of A. & G. Price Limited, to the specification of the oil companies concerned.

Internal flues were fitted into the wagons so that oil-fired heating units could be used to re-heat the bitumen as required, and two stove pipes were provided at each end of the wagons to carry off the exhaust gases from the burners.

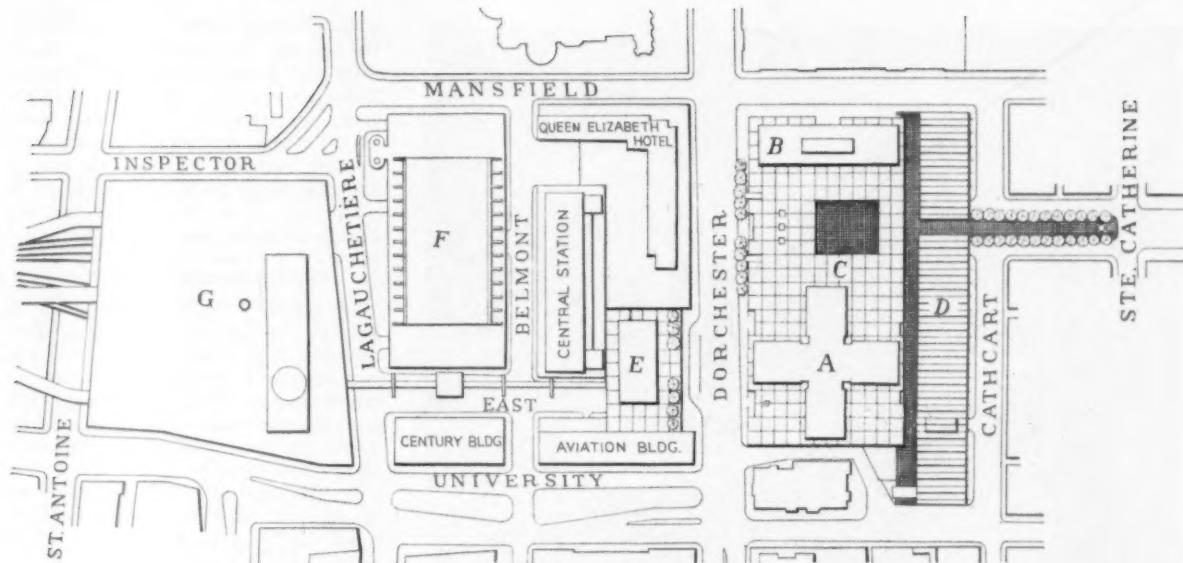
### Insulated tanks

Before loading, the bitumen is heated to 285 deg. F., and as the tanks are insulated the temperature does not fall below about 240 to 250 deg. on an overnight journey of 200-300 miles. On arrival at destination, therefore, the liquid bitumen is immediately available for transfer into road tankers or country depots. The transfer is effected by forcing the bitumen out under pressure of air supplied by compressors fitted to each tanker.

Each rail tank wagon can hold about 4,200 gal. of liquid bitumen.



"Uc" class tank wagons modified for conveyance of bulk bitumen



*Plan showing the new office block at F. The garage site is under F*

## CANADIAN NATIONAL RAILWAYS headquarters building at Montreal

THE Canadian National Railways headquarters office staff, numbering some 3,100 in all, has been housed until recently in over 20 different buildings, 1,500 of them being accommodated in quarters which were intended for warehouse space. Now, with the opening of the new headquarters office building in May this year they are, or will all be, accommodated on its 17 floors and in rooms occupying a floor space of 470,000 sq. ft.

### Situated over station

Situated over part of the Central Station and facing Mansfield and Lagachetiere Streets, this great structure has been built over three railway tracks in use and four others to be laid in the near future.

Unfortunately the layout of these seven curved tracks with platforms and baggage ramps, severely restricted the positioning of the numerous main supporting columns carrying the building. They had, in fact, been placed in an irregular pattern governed by the track clearances, which pattern could not be repeated and carried upwards where regular spacing of the columns was necessary on the various floors.

### Use of heavy girders

The transition to be made between the irregular grid at track level and the regular one above was achieved by placing heavy girders and trusses, as in bridge con-

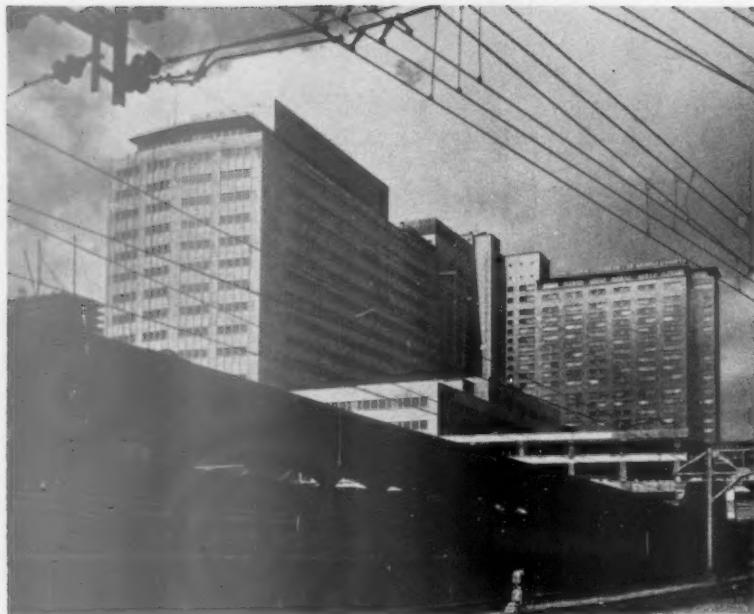
A 17-floor block built over seven tracks to house whole headquarters organisation

struction, between the first, second, and third floors, to carry the regularly-

spaced columns and loads coming from the floors above.



*Aerial view of Canadian National Railways headquarters offices, Montreal*



New Canadian National Railways headquarters as seen from rail level

Another problem faced by the designers was that of vibration resulting from train movements. Special isolation pads were inserted between the concrete footings and the columns of the steel framework. Altogether there are over 7,800 tons of steelwork fabricated with electric welding

in the frame.

The pre-cast cellular floors were laid simultaneously with the erection of the steelwork. The building is finished in glass, stone and metal to blend with surrounding structures. It is air-conditioned throughout and has eight automatic pas-

senger lifts and a cafeteria accommodating 700 persons. This is served by a food lift from the service entrance off Belmont Street; it is on the 6th floor. Another goods lift serves all floors from track level. There are also two escalators working between the first six floors; they are reversible to suit peak traffic conditions. In the lobby of the building there is a branch bank.

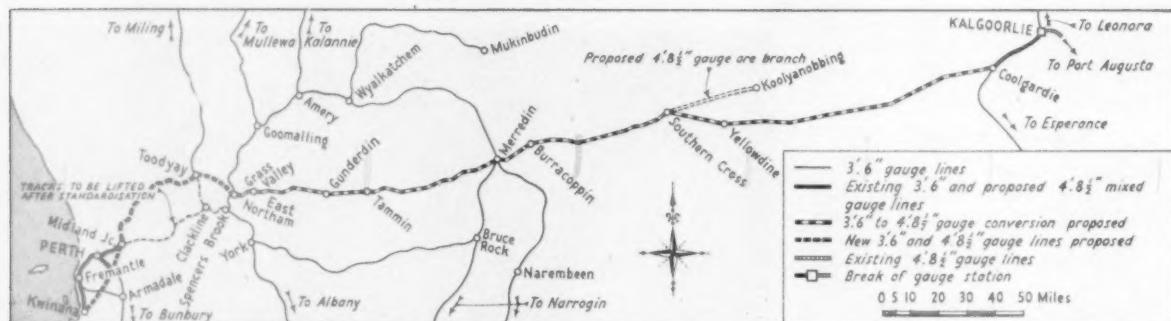
#### Message-carrying tube system

To convey messages, telegrams, and files between any one office and another the latest type of automatic pneumatic-tube system is installed. Tube stations are situated on all floors. The carriers are oval, measuring 7 in. x 4 in. x 15 in. long. The system can handle 1,500 consignments an hour.

On the east side of the building the 5th floor has been specially reinforced to carry the heavy machinery of a data-processing centre and the air-conditioning main fan-room on the floor immediately above it.

A five-storey garage to accommodate 800 cars is being built and will extend from the east face of the new office block over the space marked F on the plan until it eventually reaches East Street. The so far completed portion of it is to be seen over the station umbrella roofing in the right half of that illustration, and also in the centre foreground of the aerial view, practically alongside Lagachetiere bridge with cars on it.

### PROPOSED TRANSFORMATION OF W.A.G.R.



Map showing proposed standardisation in relation to Kwinana-Kalgoorlie line

The map above refers to the £A.41,200,000 standardisation work proposed between Kwinana and East Northam by the Western Australian Government Railways and outlined in our issues of March 31 and October 6 last. As will be seen from the map reproduced above, the standardisation will cover existing and new lines.

Since we published last week's account of the work, we have received further information on the measures proposed to be taken. New lines will connect Midland

Junction with both Welshpool and Kewdale, continuing through Kewdale to Cannington and on to Kwinana, and not through Welshpool as shown in the map on page 395 of our October 6 issue.

#### CONVERTIBLE STOCK FOR BROKEN HILL—PORT PIRIE TRAFFIC

The Federal Government has agreed to finance the purchase of 12 3-ft. 6-in.

gauge diesel-electric locomotives and 100 55-ton ore wagons by the South Australian Government at a cost of £A1,325,000. This equipment is for service on the Port Pirie—Cockburn—Broken Hill line. According to Mr. Menzies, the Commonwealth Prime Minister, these engines and wagons will be designed for subsequent conversion to 4-ft. 8½-in. gauge. The State will repay 30 per cent of the above expenditure over a period of 50 years plus interest at the long-term bond rate.

# PERSONAL

## British Transport Commission

MR. E. J. VIPOND, M.B.E., M.C., Chief Operating Officer, British Railways Division, British Transport Commission, who, as recorded in our October 6 issue, is to retire at the end of November, was educated at Archbishop Holgate's Grammar School, York. He entered the service of the former North Eastern Railway in 1913 in the Superintendent's Office, York. From 1915 until 1919 he served with the Northumberland Fusiliers. In 1919 he returned to railway service and after obtaining experience in the various sections of the commercial and operating departments, was appointed Chief Trains Clerk & Chief Controller, District Superintendent's Office, Darlington, in 1934. In 1935 he became Assistant Goods Agent, Newcastle Forth, and, in 1936, Chief Clerk, District Superintendent's Office, Newcastle. In 1937, Mr. Vipond went to York as East Coast Inspector, an all-line L.N.E.R. appointment dealing with the working of East Coast passenger trains between London and Scotland. In 1938 he was appointed Assistant to the Superintendent & Locomotive Running Superintendent (Trains) North Eastern Area, York. On the formation in



*Mr. E. J. Vipond*

1941 of the all-line Traffic Regulating Office, York, Mr. Vipond was appointed Traffic Regulating Officer and when in August, 1942, the Central Traffic Office was formed with headquarters in London, he was appointed head of that office with the title of Principal Assistant (Operating). In 1945, Mr. Vipond became District Superintendent York, and in 1948 he was appointed Assistant Chief Officer (Operating), Railway Executive Headquarters. On the reorganisation of the Operating Department in the Eastern and North Eastern Regions in 1949, Mr. Vipond was appointed Assistant to the Operating

Superintendent, Eastern & North Eastern Region, and in 1955 he became Chief Operating Officer, British Railways Division, British Transport Commission.

MR. S. K. GARRATT, formerly with Shell International Chemical Co. Ltd. has been appointed Public Relations Adviser to the British Transport Commission.

MR. C. L. SMITH, Estate & Rating Surveyor, British Railways, North Eastern Region, has been appointed Surveyor to Railway Sites Limited.

## British Railways

MR. J. H. BUSTARD, M.INST.T., Director & General Manager of the Atlantic Steam Navigation Co. Ltd. and of Frank Bustard



*Mr. J. H. Bustard*

& Sons Ltd., who has been appointed Chief Shipping & Irish Traffic Manager, British Railways, London Midland Region, was born at Hightown, Lancashire, in 1913. He was educated at Sedbergh School and in 1931 joined the Service Advertising Co. Ltd. On the outbreak of war he was commissioned in the Royal Engineers ("Q" Movements), saw service in North Africa and Italy, and was demobilised in 1946 with the rank of Major. He then assisted in the re-establishment of the family firm, Frank Bustard & Sons Ltd., as a Director and also as Traffic Manager of the Atlantic Steam Navigation Co. Ltd., which at that time was being managed by Frank Bustard and Sons. In July, 1948 he was appointed a Director of the Atlantic Steam Navigation Co. Ltd., and later became Director and General Manager of that company and of Frank Bustard and Sons Ltd. He has given up his executive position with those companies to take up

his railway appointment. Mr. Bustard is a Member of the Council of the Institute of Transport.

MR. H. W. F. RUDKIN, Staff Assistant to the Chief Mechanical & Electrical Engineer, British Railways, Southern Region, who, as recorded in our October 6 issue, has been appointed Assistant (Salaried Staff) in the



*Mr. H. W. F. Rudkin*

Establishment & Staff Department, joined the London Midland & Scottish Railway in 1927 and after gaining experience at various stations he moved to Euston in 1931, where he was engaged on organisation and staff work. In 1948 he transferred to the Railway Executive as Secretary, Motive Power Committee and two years later he was appointed Assistant (Salaried Staff) and Secretary, Joint Negotiating Committee for senior staff. In 1953, he was appointed Head of Salaried & General Section, Establishment & Staff Department, Southern Region, and in 1957 joined the Region's Shipping & Continental Department as Staff Assistant. He was appointed Staff Assistant to the Chief Mechanical & Electrical Engineer, in June, 1959.

MR. C. W. KING, Chief Civil Engineer, British Railways Control Staff, British Transport Commission, is to retire on October 14.

MR. W. J. GARROD, Freight Assistant, Traffic Headquarters, Liverpool Street, British Railways, Eastern Region, has been appointed Assistant (Special Duties), Movement Section, General Manager's Office.

MR. R. W. SAUNDERS, Assistant District Commercial Superintendent, Middlesbrough, who has been appointed Assistant to the Commercial Officer (Cartage & Terminals), York, British Railways, North Eastern Region,



Mr. R. W. Saunders

joined the former London & North Eastern Railway in 1934, and in 1947 was transferred to the District Passenger & Goods Manager's Office at Norwich. After service with H.M. Forces during the war he returned to Traffic Apprenticeship in the Hull and York Districts. In 1949, he was appointed Head of the Cartage Terminals & Works Section, District Commercial Superintendent's Office, Hull, and in 1952, he moved to the Region's headquarters office at York. Mr. Saunders was appointed Assistant Goods Agent, Hull, in 1954, Chief Clerk, Cartage & Terminals Section, Traffic Headquarters, York, in 1957, and Assistant District Commercial Superintendent, Middlesbrough, in 1960.

MR. F. R. GUNTON, Assistant in the Accounts & Statistics Division, British Transport Commission, who, as recorded in our September 15 issue, has been appointed Finance Assistant to the Line Traffic Manager, Manchester, is a Chartered Accountant (F.C.A.). He was appointed an Assistant in the Director of Acquisitions Division,



Mr. F. R. Gunton

Finance Department, at British Transport Commission Headquarters in 1949, and dealt with the acquisition of road haulage undertakings. In 1956, Mr. Gunton was transferred to the Accounts & Statistics Division, the department he leaves for his new appointment.

MR. J. SPOONER, Stationmaster, St. Albans, British Railways, London Midland Region, has been appointed Stationmaster, Ilkley, also in charge Ben Rhydding, British Railways, North Eastern Region.

MR. G. F. WEATHERLY has been appointed Stationmaster, Manchester (Central), British Railways, London Midland Region. MR. A. L. STEVENS has been appointed Deputy Stationmaster, Euston.

## Overseas

SIR ROSS McDONALD, Chairman, Local Board, Midland Railway Company of Western Australia Limited, has relinquished the position of Chairman but remains a member of the Board. He is succeeded by MR. J. S. DOWSON, who will also continue as General Manager. MR. J. F. LEDGER has been appointed to the company's local board. MR. W. W. HOLMES continues as a member.

## Institution of Locomotive Engineers

The following names have been entered on or transferred in the Register of Members since April 18, 1961.

### Honorary Member

The Rt. Hon. the LORD ROBERTSON OF OAK RIDGE.

### Members

SIR RALF BILLING EMERSON, Chairman, Metropolitan-Cammell Carriage & Wagon Co. Ltd.

MR. K. FLEET, Acting Inspecting Engineer, Crown Agents for Oversea Governments & Administrations.

MR. T. G. GRIFFITHS, Development Engineer (Rail Transport), Alcan Industries Limited.

MR. P. R. SILVERLOCK, Divisional Engineer, London Transport Executive.

### Associate Members

MR. J. BRASH, Tendering Executive, North British Locomotive Co. Ltd.

MR. G. M. BUCHANAN, Chief Test Engineer (Loco.), North British Locomotive Co. Ltd.

MR. P. S. CHAUDHURI, District Mechanical Engineer, South Eastern Railway, India.

MR. A. C. CLOTHIER, Resident Officer (Dieselisation), British Railways, Western Region.

MR. T. COTTAM, Deputy Chief of Traction Outside Department, English Electric Co. Ltd.

MR. S. K. DAR, Works Manager, Locomotive Repair Workshop, Western Railway, India.

MR. R. E. DILLEY, Engineer-in-Charge, Locomotive Test Department, Brush Electrical Engineering Co. Ltd.

MR. E. C. FORBES, Assistant Chief Draughtsman, Chief Mechanical Engineer's Department, Rhodesia Railways.

MR. J. S. HOLMES, Technical Assistant, Chief Mechanical & Electrical Engineer's Department, British Railways, Eastern Region.

MR. P. N. JHA, Fuel Officer, Western Railway, India.

MR. J. M. MARTINEZ, Assistant Chief Mechanical Engineer, General Belgrano Railway, Argentina.

MR. J. MCCOLL, Technical Assistant, Mechanical & Electrical Engineer (Workshops) Office, British Railways, Southern Region.

MR. K. H. SCHAEFER, Bei Maybach Motorenbau, GmbH, Germany.

MR. B. SMITH, Section Leader, Rail Traction Mechanical Drawing Office, Brush Electrical Engineering Co. Ltd.

MR. R. R. SMITH, Sales Engineer-in-Charge, Traction, Davey, Paxman & Co. Ltd.

MR. I. P. SUTTON, Assistant Divisional Running & Maintenance Officer, British Railways, Western Region.

MR. A. H. VICK, Assistant Works Manager, Beyer Peacock Gorton Limited.

### Transfers Associate Member to Member

MR. K. P. BROCKWAY, Railway Development Engineer, British Aluminium Co. Ltd.

MR. P. K. CHAN, Chief Mechanical Engineer, Malayan Railway.

MR. F. G. CLARKE, Assistant (Utilisation) to Line Traffic Officer, British Railways, London Midland Region.

MR. H. GADD, Development Engineer, Birmingham Railway Carriage & Wagon Co. Ltd.

MR. C. H. A. LANE, Chief Electrical & Mechanical Engineer, Ministry of Works, Northern Region, Nigeria.

MR. C. F. S. STALEY, Assistant Works Manager, Carriage & Wagon Works, British Railways, London Midland Region, Earlestown.

MR. M. M. SURI, Joint Director (Diesels), Research, Design & Standards Organisation, Railway Board, India.

## Industrial

MR. G. BEALING, Chief Sales Engineer, Paterson Hughes Engineering Co. Ltd., has retired.

MR. J. BOOCOCK has been appointed to handle the Lohmann & Stolterfoht range of gears and couplings by D. M. M. (Machinery) Limited.

MR. W. P. HOWARD, Publicity Manager, Ferodo Limited, has been appointed Public Relations Officer of the Turner & Newall Limited group. He is succeeded at Ferodo Limited by MR. P. R. W. JUPE.

SIR IVAN A. R. STEDEFORD, Chairman & Managing Director of Tube Investments Limited, has relinquished the Managing Directorship, while continuing as Executive Chairman. SIR WILLIAM STRATH, MR. W. HACKETT, JNR., and MR. R. D. YOUNG have been appointed Managing Directors.

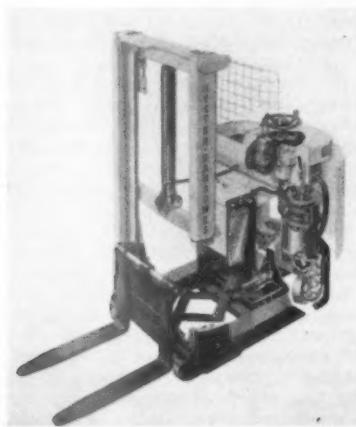
MR. J. WADDELL, Executive Director, Turner Brothers Asbestos Co. Ltd. and Glass Fabrics Limited, has been appointed Managing Director of each company. He continues as Executive Director of J. W. Roberts Limited.

MR. E. R. POCHIN, Home Sales Director, Ferodo Limited, has been appointed Managing Director of that company. MR. M. H. GOOD, Home Sales Manager, has been appointed Home Sales Director in his place.

# NEW EQUIPMENT and Processes

## REACH TRUCK

The Model R25A reach truck has been designed for continuous operation through 24 hours, seven days a week. To achieve this, the vehicle, which is battery-operated, has the normal jumper-type connector for charging *in situ* and a steel container for the battery mounted on rollers so that, with the aid of a truck-anchored battery trolley, the battery can be changed for a fully-charged replacement by one man.



An additional improvement to this latest model is the operator's position which, sideways to direction of travel, gives full vision in each direction of motion. Being seated, he can also operate pedals so that one hand is permanently available to operate the hydraulic controls.

These include the Reach drive in which a central ram, borne within the suspension housing for maximum protection, operates a scissors-action pantograph having 30-in. advance and retraction. Misalignment is avoided by rollers locked in guides between the pillars, by replaceable phosphor-bronze slide-blocks and by the hoist mechanism, which is of the interlocking sliding up-right type.

Return lines to tank on the low pressure side of the piston prevent oil leakage. Flexible high-pressure hoses are made in nylon and double-braided rubber. Non-moving pipes are manufactured from fully-annealed heavy-gauge copper.

A relief valve is fitted in the hydraulic system as a protection against overloading and eliminates shock pressures in the system. It operates at limits of lift and reach.

Hydraulic controls for these two functions are by two levers at the driver's hand, adjacent to the steering wheel and these cannot be confused with the speed and brake pedals which are at his feet.

Steering and drive mechanisms are an integral unit, turning with the driving-and steering-wheel. A door gives access to both mechanisms for maintenance. The combined contactor and resistance panel can then be released and pivoted outward. A Colton butt-contact connector links the battery to the control gear, ensuring arc-free contact and, through its quick-release lever, providing an isolator in emergency.

The drive motor is of the heavy-duty traction type series-wound. Four speeds forward and reverse are provided by electro-magnetic contactors with removable contactor tips. Insulation is to Class B. BSS. 1727.

### Transmission

The resistance is cupro-nickel heavy-duty type. Transmission is integral with the motor, and consists of a bevel drive and spur gears, all being totally enclosed in an oil-bath and mounted on heavy-duty ball-and-taper roller bearings. Steering operation is by spur gears and allows 100-deg. rotation in each direction.

Braking is duplicate. The footbrake operates an interlock to prevent power application with the brake working. A "dead-man" operation is also provided.

Servicing is unusually simple. The mast can be unshipped as a unit without interfering with reach or drive mechanisms.

Wheels are all of the same diameter and are fitted with identical Duthane tyres. The hydraulic units, like the drive unit, can be inspected by the removal of one cover.

Hydraulic power is provided by an independent compound-wound, totally-enclosed, vertical-mounted motor and direct-coupled gear-type pump mounted in the oil-tank.

### Capacity

Capacity is as follows: drive motor, 2 h.p. at 2,500 r.p.m.; pump motor, 5 h.p. at 1,500 r.p.m. Load capacity, 2,500 lb. at 20 in.; lifts to 16 ft.; fork lengths to requirement.

Further details of the truck, which is designed and manufactured by Ransomes, Sims & Jefferies Limited, can be obtained from any Hyster-Ransomes dealer, or direct from Hyster-Ransomes Division, Fore Hamlet, Ipswich, Suffolk.

## PNEUMATIC SCREWDRIVERS and nutrunners

Grasso Air Tools are made in Holland and handled in this country by B. O. Morris Limited (Morrisflex) of Coventry. They consist of three models of the straight-grip type running at 500, 900 and 1,500 r.p.m. The bodies are plastic-sheathed to insulate the operator's hand from the cold. Each is provided with a hanging loop for use when the operator is seated at the bench, and all three tools will drive screws up to  $\frac{1}{2}$  in., or woodscrews up to No. 12.



There are also five pistol-grip models running at 400, 600, 800, 1,000 and 3,000 r.p.m., driving No. 14 woodscrews or screws and bolts up to  $\frac{1}{2}$  in. in diameter.

Where silence in operation is important, this is achieved by a nose shroud used with a slotted bit in a guide sleeve. Phillips bits or an adaptor to accommodate  $\frac{1}{4}$ -in. square drive sockets are also available.

Torque is adjustable by a spanner and hexagon key in the nose of the tool, and three different torque springs are provided with each tool. As the tool operates only when the nose is pressed on the work, the trigger need not be released while the tool is being changed from one job to the next.

Further details can be obtained from the manufacturer's agent in this country: B. O. Morris Limited (Morrisflex), Briton Road, Coventry.

# Ministry of Transport Accident Report

## Collision at Baschurch, British Railways, Western Region, on February 13, 1961

Colonel D. McMullen, Inspecting Officer of Railways, Ministry of Transport, inquired into the collision between an express passenger train and a freight train at Baschurch, signalman under the warning arrangement between Shrewsbury and Chester, at 7.35 p.m. on February 13, 1961. The 6.37 p.m. Wellington to Chester Down express passenger train had been accepted by the Baschurch (3-5-5), which was permissible. He cleared the signals for it when an unfitted freight train ahead of it was being shunted into the refuge siding to clear the line for the passenger train, but was still partially obstructing the main line. The passenger train was travelling at 40-45 m.p.h. when the engine struck the leading vehicle of the freight train a glancing blow and then the rear end of the freight-engine tender, afterwards overturning on the Up line. The leading vehicle of the passenger train, a stores van, was thrown forward on the Up station platform alongside the engine, and the next vehicle, a passenger coach, was thrown partially on top of it. The van caught fire and was burnt out, and the fire spread to the greater part of the passenger coach. The driver and fireman of the passenger train and one of the two storemen in the stores van were killed. The other storeman was seriously injured, while the driver, fireman and guard of the freight train, the guard of the passenger train, and two passengers received slight injuries.

### Description of line

The line into Baschurch is on a rising gradient of 1 in 131. Baschurch Station is now closed. The refuge siding is at the Shrewsbury end of the station, with a trailing connection to the Down main line. It is 431 yd. long, and holds 58 four-wheel wagons and an engine and brakevan. It lies on a gradient similar to that of the main-line, so that it too falls away from its connection with the main-line.

The signalbox is at the Chester end of the station, by a level crossing. It is 123 yd. from the trailing points of the siding which are in the main-line, and 170 yd. from the disc signal controlling movements out of the siding and lying immediately rear of the trap points to the siding. There is also a disc signal controlling movements from the main line back into the siding. The Down main distant signal is 1,146 yd. in the rear of the signalbox, and the Down main home signal 426 yd. in the rear. The Down main inner-home signal is opposite the signalbox and the starter 350 yd. in advance.

The stores van, which was wrecked and which caught fire, was equipped with propane gas for heating and cooking. Each cylinder had a closing valve and two excess-flow valves, and a high-pressure hosepipe with a non-return valve connected the cylinders to

the gas piping leading to the burners. The excess-flow valves operated if there was a defect in the gas level and allowed the gas to leak away from the cylinders at a slow rate.

After the accident the four propane-gas cylinders were found to be intact. One was full with its closing valve shut. The other three were empty. All the valve gear and the hosepipes from three cylinders were found in good order, the pipe from the remaining cylinder having been cut through. The gas-pipe line was badly damaged.

The passenger coaches each had a steel-panel body on a timber body-frame, mounted on a steel underframe. The leading coach, which caught fire, was repainted in 1958, when standard paints and varnishes with no cellulose content were used.

The freight train comprised 43 wagons and a 20-ton brake van. The length of the wagons was the equivalent of 46 four-wheel vehicles. The leading vehicle was a bogie bolster, 52-ft. long over headstocks, and having a clear distance of 34 ft. 6 in. between the rear wheels of the front bogie and the front wheels of the rear bogie.

### Evidence

The driver of the freight train described how he was checked at Baschurch home signal. He thought that his train would probably be side-tracked for the following passenger train to pass, and this was confirmed when he passed the signalbox and received a white light from the signalman. Having stopped the train, the guard gave him a hand signal for him to set back. He thought the greater part of the train was in the siding when the guard signalled him to slow down, which he did. He also felt resistance to the train's movement, and the train stopped, when he thought that it must have reached the buffer stop.

When the train stopped, in fact, the engine was well beyond the trailing points in the main line and its leading coupled wheels were somewhere near the frog of the crossing. The widely spaced bogies of the bolster wagon were on either side of the switches or the trap points in the refuge siding.

The driver said that, when the train stopped, he got down from the engine and started to walk towards the rear of the train. After passing four or five vehicles, he turned round and saw that the inner home and starter (both in advance of his train) had been cleared. Assuming that there had been a change of plan and that his train was to go ahead, he returned to his engine, but on his way he did not notice that the outlet disc signal from the siding was at danger. He re-started the train, but it had not moved far when it stopped. At the same time his fireman shouted that something was coming. He thought that the passenger train engine was steaming and travelling at ordinary express train speed immediately before the collision.

The guard of the freight train said that when the train was being backed into the siding, the brake of the brake van was applied sufficiently to keep the buffers of the wagons together on the falling gradient.

When he thought that the train was almost completely in the siding he signalled the driver to slow down and then turned his lamp towards the buffer stop to see how far away it was. The train then stopped. At first he was adamant that he had not made any further brake application to cause it to stop, but later he said that he might have done so.

### Home signal cleared

The guard of the passenger train said that the distant was at caution when the train passed it. The home signal was cleared when the train was about 1½ coach lengths from it—or perhaps more. The train then accelerated and had reached a speed estimated by him at 30-35 m.p.h., when the accident occurred. He did not know what had happened, and he straight away went back along the line to protect his train.

The Baschurch signalman said that he knew that the freight train had to be shunted, and as it approached the box, he gave the driver a white hand signal to indicate that he was to go "inside." The train stopped, and the guard gave him a hand signal that the train was clear of the points leading into the siding. He reversed the points and cleared the relevant disc signal, and the train was backed into the siding.

When the train was nearly fully in the siding, he put back the disc signal, gave train out of section, and then was offered and accepted the passenger train under the warning arrangement. A minute later he received "train entering section," and he offered the train forward and it was accepted. He could not remember having heard the whistle code from the freight train's driver, but on looking through the open window he saw from the headlight that the train was at a stand. He thought that it was completely in the siding, but he took his hand signal lamp and waved a red light towards the train three times. He repeated that signal, but still got no acknowledgment. He therefore left the hand signal lamp showing towards the siding. He then tried the lever working both the trailing points in the main line and the trap points in the siding. Finding it free, he felt confident that the train was completely in the siding. He therefore replaced this lever to normal and cleared his signals, including the distant, for the Down express. He was certain that the driver must have seen the distant at clear.

The signalman said that he thought that the freight train driver might have sounded his whistle while an Up express was passing, and that consequently he did not hear it. He thought that the freight train had been stationary for 3-4 min. After clearing the signals for the Down express, he saw the freight train moving out of the siding. He at once replaced all signals to danger, and realising that there must be a collision sent "obstruction danger" in both directions. After the collision he went to the site to see if he could help, and then returned to the box and called the emergency services. He said that the fire did not start at once.

When it did break out, it was a small one, which gradually increased in magnitude.

He stated that freight trains were frequently side-tracked at Baschurch, and that, consequently, it was common for trains to be accepted under the warning arrangement. He had previously used a red hand signal for signalling to the driver of a freight train in such circumstances, although he knew that it was irregular.

#### Small fire started

The surviving storesman, who was seriously injured, could not be interviewed until May 18. He then said that he thought that the express train was travelling at its normal speed. After the collision he got out of the stores van to look for his mate. Three or four minutes later he returned to the van, and saw that a small fire had started at one end. He thought that it was timber burning.

The Chief Fire Officer of Shropshire County Fire Brigade, said that when he reached the site 25 minutes after the accident, he found a large fire burning, and had to wait for the arrival of a water tender before he could get the fire under control. The severity of the burning made it impossible to reach a definite conclusion as to the cause of the fire. The stores van contained inflammable stores. There was evidence on one of the propane cylinders in the detached bogie of the carriage of a rapid discharge of gas, but as it was detached and not in the part of the carriage that was on fire, it was unlikely that it caused the fire. The reasonable supposition—and it was nothing more—was that coals from the over-turned engine had in some way found their way to inflammable materials and set them alight. The position of the engine and the carriage that was on fire was very significant in that regard. From the nature of the flames it did not appear that oil was burning.

#### Inspecting Officer's conclusions

Colonel McMullen found that the cause of the accident was the Baschurch signalman's failure to ensure that the freight train was completely inside the refuge siding before he cleared the signals for the express train. There was no excuse for his mistake. There were no track circuits but the distance from his box to the train was not great, the night was clear, and by relating the position of the engine head-lamp to the back light of the outlet disc signal, it was possible to see whether a train was completely inside the siding or not. If he was in doubt, he should have gone to the site and satisfied himself that the main line was clear. The fact that the points lever was free to move did not necessarily mean that the train was clear of the main line. Track circuiting would have prevented the accident. There were a large number of installations where there were no track circuits, and a great many of them will remain so, and in use for a long time. At such places safety will depend upon signalmen complying with the rules and not making foolish mistakes. Colonel McMullen hoped that this would serve as a useful lesson generally.

The irregular hand signal had no bearing on the accident, but this malpractice had caused accidents in the past, and so should be stopped.

Neither had the acceptance of the express

train under the warning arrangement any direct bearing on this accident. But Colonel McMullen thought that it was undesirable that the backing of trains into the siding should result in its use regularly for passenger trains as well as goods trains. He was glad to learn that there was a scheme for converting this siding into a loop by means of a facing connection, and he hoped that the work would be undertaken soon.

Colonel McMullen did not think that the driver of the express train saw the distant signal at clear, and he probably also saw the home signal at danger. If the latter signal was cleared before the express train was too close to it, the train would have accelerated rapidly. Its engine was steaming just before the collision, and its speed must then have been 40-45 m.p.h.

#### Brake applied too soon

Colonel McMullen thought that the freight train was stopped before it was completely "inside" by the guard applying his brake too soon. The guard should have known that there was plenty of room in the siding. It was also difficult to understand how the driver failed to see that the outlet disc signal was at danger, as he walked past it back to his engine. He had not seen it at clear, nor had he received any hand signal from the signalman, and therefore, had no justification in assuming that the running signals had been cleared for his train. Still the accident would have occurred anyhow.

Colonel McMullen was sure that the fire was started by the burning coal thrown out of the overturned engine. There was nothing to indicate that there was any kind of explosion of the propane gas. The excess flow valves on the cylinders were found in good order, and the gas would have leaked away slowly. It was probably ignited by the fire, but did not add appreciably to its intensity. Propane gas is a convenient method of heating and cooking, and is used extensively in railway dining and sleeping cars. The equipment provided as a safeguard, particularly in the event of an accident, worked correctly in this case, and Colonel McMullen was satisfied that the fact that there was a gas installation in the leading coach of the train had no bearing on the starting of the fire.

### Cleaning bus interiors

A new method of cleaning bus interiors, using an air-water lance, is now being introduced by London Transport. It is more than twice as fast as existing vacuum cleaning methods. The device was brought into use recently at Mortlake garage, and London Transport is planning to install it in all its bus garages within the next two years.

#### Increased washing capacity

Buses at London Transport garages are cleaned internally on the "run-in" from service while they are being re-fuelled and before exterior washing is carried out. The use of automatic fuel-filling nozzles and automated exterior washing machines has brought the potential fuelling and washing capacity to 50 buses an hour, but it is impossible to vacuum clean the interiors, even with the large and efficient "gobbler" hoses

being used simultaneously in upper and lower saloons, in less than 4 min. This limits the number of buses passing through the run-in servicing process to 15 an hr. for each service line.

For some time, therefore, London Transport's road vehicle maintenance engineers have been seeking a method of speeding up the inside cleaning of buses to enable all



Air-water lance for cleaning buses

aspects of the run-in procedure to be dealt with at the same speed.

Early in the investigations the possibility of speeding-up vacuum cleaning to the required extent was discarded and tests were started using compressed air. From these tests a successful method of blowing out waste material and dirt from inside the vehicle has been evolved. It takes less than half the time needed for vacuum cleaning, involving far less effort on the part of the operator, and as a result London Transport hopes to be able to service 30 buses an hour through a single refuelling and washing line.

#### Description of method

The device used consists of a metal lance held by twin or co-axial pipes with compressed air at 150 lb. per sq. in. and water at mains pressure (the exact water pressure is not important). The lance introduces small quantities of water into the compressed air blast which produces a fine mist spray so that the air is sufficiently wet to keep any dust from rising. The hoses are contained in spring-loaded reels and are readily recoiled after each cleaning operation.

In operation, the lances are taken through front windows on upper and lower decks, and the operators work towards the rear of the vehicle blowing dirt and waste, which can include sodden newspapers, cartons, banana skins, etc., on to the platform, and subsequently into a container placed near the platform for this purpose. There are obvious applications for the air-water lance on the underground system and on the railways, though some special types of containers will have to be designed for receiving the rubbish from various configurations of rolling stock.

## Antofagasta (Chili) & Bolivia Railway

### Operating results reasonably satisfactory

The seventy-third annual general meeting of The Antofagasta (Chili) & Bolivia Railway Co. Ltd., was held on October 10 in London, Mr. H. C. DRAYTON (chairman) presiding.

The following are extracts from his circulated statement for the year 1960:

You will see from the Revenue Account that, after transferring £12,052 to the Equipment Fund, there were net receipts from the Antofagasta Company's own Railways, Moles and Waterworks, before deducting Debenture interest, of £209,027.

The Directors recommend that a dividend of 3 per cent (less Income Tax) be paid on the Consolidated Ordinary Stock.

Up traffic over our Chilean Section main line was 332,595 tons in 1960, compared with 359,825 tons in 1959, a decrease of 7½ per cent. The principal reductions were in Mining Articles and Fuel Oil for Chuquicamata and Bolivia. Increases were shown in Petroleum, Mining Articles (Public) and Explosives and Inflammables.

Down traffic decreased by 23 per cent in tonnage, from 646,183 tons in 1959 to 496,134 tons in 1960. The largest single items of decrease were General Merchandise and Copper from the Chile Exploration Company's Chuquicamata establishment. The decrease in Copper—from 281,741 tons in 1959 to 231,638 tons in 1960—was mainly attributable to the six weeks' strike at Chuquicamata. Indications were that Copper production would be increased in 1961, but this may have been affected by the prolonged strike of the Chilean copper workers.

Minerals exported from Bolivia through the Port of Antofagasta also showed a reduced tonnage in 1960, namely of 12 per cent.

The number of passengers carried was a little higher than in 1959.

Our Waterworks Section again gave us a small profit, due largely to local contracting work.

Our Moles Section at Antofagasta has now

been closed down. Because of circumstances beyond our control, this Section was operated at a loss. In fact, it was only at the request of our principal client, the Chile Exploration Company, who had agreed to respond for their tonnage proportion of the loss, that we did not close down several years ago. Early in 1961, however, they notified us that they would in future be using the Fiscal Port Works entirely, which left us with no alternative but to close down this Section of our business.

The Chilean Northern Longitudinal Railway, which since December 30, 1957, we had operated for account of the Chilean State Railways, was, at the Chilean Government's request, officially handed over to the State Railways on April 30, 1961. Since that date, the State Railways have operated the line themselves.

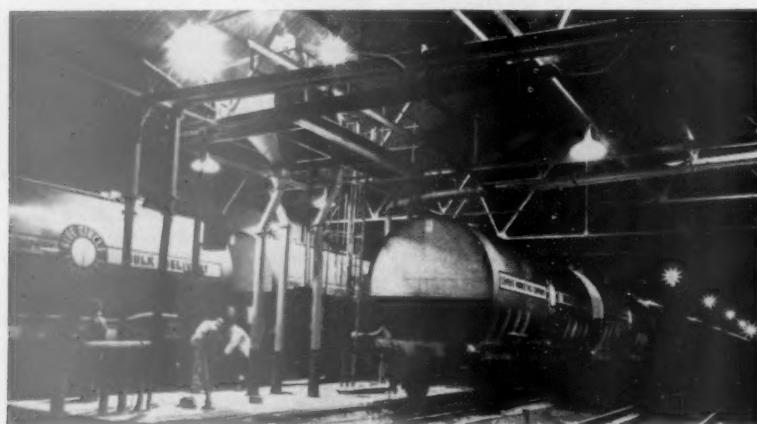
You will be interested to know that the six main-line Diesel-Electric Locomotives ordered by us in September 1960, from General Motors Corporation, New York, have all been received in Chile, where they have been in service since May of this year. These 1,425 h.p. locomotives are at present operating between Antofagasta and Calama—a distance of 150 miles, rising from sea-level to 7,460 ft., and hauling the Chuquicamata Copper Mine traffics. Although it is too early yet to give exact operating economies, preliminary reports are encouraging, and we see no reason for not expecting fairly substantial economies.

The report was adopted.

### Blue Circle rail depot at Uddington

A depot was opened on October 4, at Uddington by the Cement Marketing Co. Ltd. This will supply the Glasgow area with cement brought from the Kent works of the company. The capital cost of the depot, its specially-designed lightweight rail wagons, and the loading facilities at the company's works, is nearly £1 million.

The scheme is part of the Blue Circle Group's Scottish expansion programme and provides an example of co-operation between



Bulk delivery wagons discharging into under-rail hoppers at Uddington Depot

British industry and British Railways. Regular bulk transport guaranteed by the group has made it possible to arrange for a regular and uninterrupted service of express diesel-hauled freight trains from the Thames to Scotland. There will be eight trains weekly, each or 1,050 tons, with 800 tons net payload.

Each locomotive hauls 30 bulk rail tankers with special lightweight alloy bodies designed jointly by the Central Engineering Department of the Associated Portland Cement Manufacturers and the manufacturer, the Gloucester Railway Carriage & Wagon Co. Ltd. British Railways engineers co-operated in advice on the construction of the wagons, which have been approved by the British Transport Commission.

### Aluminium construction

Except for the wheels, the wagons are fabricated entirely in aluminium alloy supplied by Alcan Industries. They are fitted with automatic vacuum brakes and roller bearings. Turn-round at Uddington has been speeded up so that the whole train is unloaded within 4 hr.

The depot comprises four silos, three of which will contain Blue Circle ordinary Portland cement, and one Ferrocement rapid hardening cement. Each silo will hold 1,250 tons, making a total of 5,000 tons. There is also a bagging plant.

### Institution of Locomotive Engineers

A meeting of the members and guests of the Institution of Locomotive Engineers is to be held on Wednesday, October 25, 1961, at the Ansty Works of Bristol Siddeley Engines Limited.

The tour will include visits to No. 1 shop where Sapphire jet engines are stripped, inspected, repaired and rebuilt, No. 2 shop, (the Maybach shop) where castings for Maybach engines are assembled, the 10,000-h.p. test house, and No. 4 shop which contains the development machine shop, tinsmiths and coppersmiths.

Accommodation has been reserved on the 9.10 a.m. from Paddington to Leamington Spa where members and their guests will be met by buses and conveyed to Ansty.

### Irish cross-channel service

*Caledonian Princess*, the 3,600-ton cross-channel luxury steamer owned by the Caledonian Steam Packet Co. (Irish Services) Ltd., went into service on October 9, from the port of Stranraer in Wigtownshire to Larne in Northern Ireland. The ship has been specially designed to accommodate accompanied commercial road vehicles and trailers: they can be driven on or off at all states of the tide with the help of a bow lateral thrust unit. This is a cycloidal propeller in the bow which assists manoeuvring when entering or leaving port.

*Caledonian Princess* will leave Stranraer at 7 a.m., arriving Larne at 9.15 a.m. She leaves Larne at 11 a.m., reaching Stranraer 1.15 p.m. The afternoon sailing leaves Stranraer at 2.30 p.m. and reaches Larne 4.45 p.m. At 6.50 p.m. *Caledonian Princess* leaves Larne and arrives Stranraer at 9.5 p.m.

Manufacturers in both Scotland and



The "Caledonian Princess," which came into service last Monday

Northern Ireland will be quick to appreciate the advantages of this service, which is a valuable addition to the economy of both countries. Road hauliers, too, will find that this is the best way of speeding their freight across the Irish Sea. As well as commercial vehicles, motor cycles and bicycles are carried, and there is accommodation for nearly 1,400 passengers. There is a crew of 77.

Comfort comes in the latest type of Denny/Brown stabilisers which ensure a smoother crossing of the Irish Channel.

### Reorganisation of Gorton Works of Beyer, Peacock & Co. Ltd.

The Gorton Works of Beyer, Peacock (Hymek) Ltd., have been reorganised to accommodate the changeover in the building programme from steam to electric, diesel-electric, and diesel-hydraulic locomotives. Production has been largely concentrated on British Railways Type 3 diesel-hydraulic locomotives for the Western Region and, on October 9, a party of guests was invited by Mr. Harold Wilmot, Chairman of Beyer, Peacock (Hymek) Limited to inspect the locomotives under construction.

The party included the following:—Mr. D. C. Brown, Chief Mechanical Engineer, Crown Agents for Oversea Governments & Administrations; Mr. D. Caplan, Assistant Secretary, Engineering Division, Board of Trade; Mr. G. R. Curry, Director, Locomotive & Allied Manufacturers' Association; Mr. A. H. Earley, Chief Ports Manager, East African Railways & Harbours; Mr. W. D. Farrington, Chief Inspecting Engineer, Crown Agents for Oversea Governments & Administrations; Mr. J. R. Hammond, General Manager, Western Region, British Railways; Mr. S. G. Hearn; Mr. L. W. Ibbotson, Assistant General Manager, Western Region; Mr. F. C. Kapoor, Railway Adviser, India Stores Department; Mr. W. H. W. Maass, Advisory Engineer, South African Railways; Mr. F. G. Manning,

Contracts Officer, British Transport Commission; Mr. E. M. Read, Advisory Engineer, New Zealand Railways, London; Mr. C. J. Rider, Public Relations & Publicity Officer, Western Region, British Railways; Mr. S. Ridgway, Works Manager, Swindon Locomotive Works; Mr. C. E. R. Sherrington, Director, Research Information, British Transport Commission; Mr. W. J. A. Sykes, Chief Mechanical & Electrical Engineer, Southern Region, British Railways; Mr. R. A. Smeddle, Chief Mechanical Engineer, Western Region, British Railways; Mr. R. Thompson, Motive Power Officer, British Transport Commission; Colonel R. J. Walker, Benguela Railway; Mr. F. W. Wagstaff, District Passenger Manager, London Midland Region, British Railways, and Mr. H. E. A. White, Running & Maintenance Officer, Western Region.

Deliveries of the Type 3 diesel-hydraulic

locomotive, an illustrated description of which was given in *The Railway Gazette* of July 21, commenced in May, 1961, about 2½ months ahead of schedule, and the present order for 95 locomotives is scheduled for completion in 1963.

Under the works reorganisation scheme, the iron and steel foundry has been closed and this building converted by the installation of presses, cutting, and welding equipment into a steel fabrication department. The steam boiler shop has been converted into a series of bays for the locomotive stage assembly and erection. The operation of wheeling is carried out by the use of four 25-ton electric jacks. This method provides precision-controlled lifting and frees the overhead crane for other duties. Movement of complete locomotives is facilitated by the installation of a 160-ton Cowans Sheldon traverser. Bogies are assembled from fully-machined Commonwealth bogie castings supplied by the English Steel Corporation and moulded glass-fibre cab canopies by Insulation Equipment Limited.

A full range of sub-assemblies showing engines, transmissions, cooling group, control gear, and auxiliaries was displayed.

### Staff & Labour Matters

#### Railway wage claim

The British Transport Commission's reply to the claims of the three railway trade unions for increased rates of pay was given at a meeting of the Railway Staff Joint Council on October 12. Details of the reply will be given in our next issue.

The claims of the trade unions vary, being broadly:—

By the N.U.R.—for a substantial increase in rates of pay

By T.S.S.A.—for an increase in the rates of pay of salaried staff to maintain relativity with those industries covered by the Guillebaud Committee

By A.S.L.E.F.—for a ten per cent increase in rates of pay of locomotive grades.



Visitors to Gorton (left to right): Mr. H. H. Thackstone, Midland Bank Limited; Mr. H. Wilmot; Mr. T. Chapman, Hawker Siddeley Limited; Mr. J. R. Hammond; Mr. D. Patrick, Chief Engineer, Beyer Peacock (Hymek) Limited; Mr. L. T. Davies, Beyer Peacock & Co. Ltd.

The Railway Staff Joint Council is the first stage in the negotiating machinery.

#### Midland Pullman services

Catering staff on the Midland Pullman Service between London and Nottingham have refused to work the service beyond Leicester.

They claim that extension of the service between Leicester and Nottingham is an encroachment on the nationalised service by the Pullman Car Co. The running of the Pullman train to Nottingham began on Monday October 2.

#### London bus pay claim

A claim for a substantial increase in pay, and shorter hours on Saturdays and Sundays, was submitted on October 4 to the London Transport Executive by the Transport & General Workers' Union on behalf of London bus workers.

The union's spokesman stated "we cannot accept that there is any pay pause, and we regard this section of the industry as a depressed section. If the bus service deteriorated it could mean a very serious situation for the London travelling public."

The union's submissions are being considered by London Transport.

## CONTRACTS & TENDERS

British Railways, Eastern Region, has placed the following contracts:

Bernard Stokeley Limited: alterations to existing building and provision of concrete slab for new building for Machine Accounting Centre, Peterborough;

Wellerman Bros. Ltd.: construction of a new signalbox at Boultham Junction, Lincoln;

Ransomes & Rapier Limited: supply and delivery of one fork lift truck;

Bowers & Barr Limited: supply and erection of an electrical installation at Melton Constable Station, goods depot and yard;

Wm. Proctor & Sons Ltd.: reconstruction of awning and resurfacing of Down platform at Lincoln St. Marks Station. Reconstruction of awnings over Down and Up platforms, provision of new waiting room to Up platform and ancillary works at Louth Station;

The Freeman Heating Co. Ltd.: provision of heating installation together with boilers, plant, etc., and hot water services including external heating mains for the District and Signal Engineers' Workshops, Signal Engineer's Stores and District and Signal Engineers' Offices and Messroom at Marshgate Yard, Doncaster;

Thomas Fletcher & Co. Ltd.: general repairs to air shafts and tunnel lining in Clarborough tunnel, between Retford and Sturton.

British Railways, Southern Region, has placed the following contracts:-

John Mowlem & Co. Ltd.: engineering works at Ashford, Kent;

P. & M. Contractors Limited: station renovations at Effingham Junction;

Maurice Hill Limited: station renovations at Portsmouth Harbour; cleaning and painting of bridge at Wadebridge;

The Butterley Co. Ltd.: reconstruction of bridge at Brookwood;

R. G. Odell Limited: dismantling and removal of redundant wharf at Blackfriars;

Aubrey Watson Limited: repairs to station at Elmers End;

Bagshot Sawmills Limited: felling and lopping of trees at London (Western) District;

The Cleveland Bridge & Engineering Co. Ltd.: reconstruction of Star Lane bridge at Coulsdon North;

Durable Asphalte Co. Ltd.: recladding of roof at Waterloo Station;

R. Corben & Son Ltd.: extension to warehouse at Canterbury West;

G. J. Furneaux Limited: drainage works at Frost Lane, Fawley;

Homan & Rodgers Limited: repairs to viaducts at Blackfriars, Nunhead;

Bromby & Hoare Limited: station renovations at Pokesdown;

The Butterley Co. Ltd.: reconstruction of Point Pleasant bridge, Wandsworth Town;

Alfred Bagnall & Sons Ltd.: station renovations at Surbiton;

Thermit Welding (Great Britain) Limited: welding of rails, Brighton and Eastleigh District.

**The Export Services Branch, Board of Trade, has received calls for tenders as follow:-**

#### From Burma:

Blank railway tickets, 30.5 mm. x 57 mm. x 1 mm.

10 million buff

3 million green

1 million grey

1,700,000 yellow, one side printed with letter R

Blank flat board for railway tickets, 25 in. x 23 in. x 85 mm.

136,000 buff sheets.

The issuing authority is the Office of the Controller of Stores, Burma Railways, Botataung, Rangoon, to which bids should be sent. The tender No. is 612/14/Sty. (1961-62). The closing date is October 31, 1961. The Board of Trade reference is E.S.B./31059/61.

#### From Egypt:

16 metal rectifiers for battery charging.

The issuing authority is the Egyptian Railways. Bids should be sent to the Mechanical & Electrical Engineering Department, Egyptian Railways, New Building, beside Shoubra Bridge, Cairo. The tender No. is E.R.142-3/2. The closing date is October 30, 1961. The Board of Trade reference is E.S.B./31041/61.

13,000 kg. Aluminium

2,000 kg. Nickel.

The issuing authority is the Egyptian Railways. Bids should be sent to the Purchases & Stores Department, Railway Building, Fifth Floor, over Shoubra Subway, Cairo. The tender No. is E.R.306.G.8/548. The closing date is November 11, 1961. The Board of Trade reference is E.S.B./31040/61.

#### From India:

Light machine-moulding layout.

The tender No. is SFM-61/09/29A. The closing date is December 21, 1961. The Board of Trade reference is E.S.B./25818/61.

2 metal-carrying ladle wagons.

The tender No. is SFM-61/09/34A. The closing date is December 22, 1961. The Board of Trade reference is E.S.B./25820/61.

4 portable mould dryers.

The tender No. is SFM-61/09/33A. The closing date is December 22, 1961. The Board of Trade reference is E.S.B./25819/61. The issuing authority for the above tenders is the General Manager, Chittaranjan Locomotive Works, Chittaranjan, District Burdwan, to whom bids should be sent.

#### From Iraq:

500 tricolour railway lamps  
2,000 torches.

The issuing authority is the Director of Contracts & Purchases, Ministry of Defence, Baghdad, to whom bids should be sent. The tender No. is ORD/102. The closing date is November 13, 1961. The Board of Trade reference is E.S.B./31062/61.

#### From New Zealand:

200 class "k.p." wagons.

The issuing authority is the Comptroller of Stores, New Zealand Government Railways, Private Bag, Wellington, C.1, to whom bids should be sent. The closing date is November 22, 1961. The Board of Trade reference is E.S.B./31024/61.

#### From Sudan:

4 platform trucks to the following specification:-

Steel framed platform truck, platform size 30 in. x 50 in. approximately, with a height of platform 12 in. approximately and maximum load approximately 10 cwt. to be on solid rubber tyre wheels

The tender No. is 2454. The closing date is November 16, 1961. The Board of Trade reference is E.S.B./31678/61.

1 goods shed.

Dimensions: 150 ft. long centres of stanchions x 50 ft. wide centres of stanchions x 14 ft. 3 in. high from platform level to eaves level. Roof overhangs 4 ft. 3 in. at each side.

Stanchions: 26 side stanchions 8 in. x 4 in. x 18 lb./ft., 6 stanchions, 6 in. x 3 in. x 12 lb./ft. for cable ends.

The tender No. is 2449. The closing date is November 13, 1961. The Board of Trade reference is E.S.B./31677/61.

17 electric motors 2-20 h.p.

4 air-break control panels

5 air-break star-delta starters

8 automatic direct to line starters

16 forge blowers.

The tender No. is 2443. The closing date is November 8, 1961. The Board of Trade reference is E.S.B./31321/61. The issuing authority for the above tenders is the Office of the Controller of Stores, Sudan Railways, Atbara, to which bids should be sent.

*Further details relating to the above tenders together with photo-copies of tender documents, unless otherwise stated, can be obtained from the Branch (Lacon House, Theobald's Road, W.C.1).*

## NOTES AND NEWS

**Institute of Transport luncheon.** Dr. Richard Beeching, Chairman, British Transport Commission, is to be the speaker at the annual anniversary luncheon of the Institute of Transport to be held at the Connaught Rooms, Great Queen Street, London, W.C.2, on November 7.

**Drake & Godham Limited** is celebrating its 75th anniversary this year and is holding a series of staff dinners to mark the occasion in London, Cardiff, Manchester, and Exeter. There will also be a party for friends and clients at the May Fair Hotel, London, on October 24.

**Kent Coast electrification.** The remaining two lines to be electrified in Kent were switched on last week, eight months ahead of schedule. On October 2, the 14-mile stretch from Ashford to Canterbury West was electrified, and on October 3, the 19 miles between Maidstone East and Ashford. The full, streamlined, services of faster, regular-interval electric trains start in June next year.

**British M.P.s visit railway training school.** Sir Frank Markham, Conservative M.P. for Buckinghamshire, and Mr. Leslie Spriggs, Labour M.P. for St. Helens, recently visited the railway training school and the Chief Mechanical Engineer's workshops of the East African Railways & Harbours in Nairobi. As a former railwayman, Mr. Spriggs commended industrial training in



One of the windows recently installed at Transad House

general and that provided by the Nairobi school in particular. He said that the accommodation provided for students of all grades was of a standard second to none. Sir Francis Markham endorsed Mr. Spriggs' views and added his appreciation of the spaciousness of the school and workshops.

**British Transport advertising.** Continuity, colour coverage, and cost provide the subject matter for the six new window displays installed at the headquarters of British Transport Advertising—Transad House, Leicester Square Station, one of which is illustrated above. Photographs of advertisements on each of the major British Transport adver-

tising media—buses, roadside sites, British Railways and Underground stations have been used to illustrate how an advertiser's message can be given extra impact by colour as well as effective continuity and wide coverage at economical costs. The displays were designed and installed for British Transport Advertising by London Press Exchange Limited and Publicity Arts Limited.

**Continental sailings.** British Railways, North Eastern Region, has published a folder giving details of principal steamer services for passengers, between Newcastle, Hull and Goole, and the continent. It also contains information on fares, booking arrangements and accommodation available on the vessels, together with addresses of the shipping companies concerned.

**Southern Railway Association.** The fourteenth annual reunion luncheon of the Southern Railway Association was held at the Charing Cross Hotel on Tuesday, October 10, 1961, with Colonel Sir Eric Gore-Browne, the last Chairman of the Southern Railway Company, presiding. Mr. C. P. Hopkins, General Manager of the Southern Region of British Railways, was the Association's guest.

**Great Central Association.**—The passengers who organised themselves into the Great Central Association do not want to see 25 stations partly or completely closed. This is what plans to withdraw all local passenger services between Aylesbury and Sheffield would mean, if approved. The association, formed last year after withdrawal of some other former Great Central services, wants the local services improved rather than withdrawn. The Association has submitted its proposals to the Central Committee of the Transport Users' Consultative Committee.



Left to right : Mr. J. P. Lovegrove, Sir Frank Markham, Mr. W. F. Bulman, and Mr. Leslie Spriggs, at the East African Railways & Harbours training school

**Improved service in Scottish region.** The 7.32 a.m. Saturdays only train from Neilston High to Glasgow Central now runs daily

and a train for Glasgow starts from Neilston High at 7.56 a.m. calling at Patterton 8.2 a.m. On Monday to Friday evenings the 5.24 p.m. and 5.57 p.m. trains from Glasgow Central to Whitecraigs are extended to call at Patterton and Neilston High.

**Hook of Holland campaign.** The Eastern Region of British Railways is launching a publicity campaign for the night and day services to the Continent via Harwich and the Hook of Holland. Everets Advertising Limited is staging the campaign with press advertisements, posters and special displays on British Railways stations and ticket agencies.

**Revised British Standard.** In revising the 1953 edition of B.S.2048, dimensions of fractional horse-power motors, part 1—dimensions of motors for general use, the British Standards Institution has increased the number of frames specified to five and has clarified some of the provisions of the specification. Dimensions specified are those necessary to ensure that motors of different make, but of the same frame size, will be mechanically interchangeable so far as shaft and mounting dimensions are concerned. With the exception of frame 42 and the flange mountings, dimensions permit interchange of the frames with those specified in the (American) N.E.M.A. standard M.G.I.—January, 1959, dealing with general purpose fractional—horsepower motors. The specification applies to single and polyphase a.c. and d.c. motors having enclosure of the type permitted by B.S.170 and with sleeve or ball-bearings. The mountings are foot, flange, and resilient-base, with or without belt-tensioning devices. Copies of this Standard may be obtained from the British Standards Institution, Sales Branch, 2 Park Street, London, W.1, price 5s. each. (Postage will be charged extra to non-subscribers.)

## Railway Stock Market

Reduction in bank rate from 7 per cent to 6½ per cent, and hopes of a further cut to 6 per cent before long, led to a better trend in stock markets, though all the earlier gains in industrial shares were not held. Sentiment was affected by doubts about a turn for the better in international affairs, and also by the Chancellor's warning that the lower bank rate does not indicate an early end of the credit squeeze or of his request for a "wages pause." In fact a factor which has helped to keep markets in a cautious frame of mind is the fear that the wages pause may lead to strike action by some unions.

Not much business has been passing in foreign rails, but Antofagasta stocks tended to attract somewhat more attention following further consideration of the annual report. The ordinary stock strengthened from 17½ to 18, while the 5 per cent preference was maintained at 35½, at which there is a yield of over 14 per cent, which must be regarded as unduly generous, because there seems no reason why the dividend should not remain reasonably covered for the current year. In fact, it would appear that the ordinary stock should keep in the dividend list. Brazil Railway bonds were 3½, Costa Rica ordinary stock again 38½ and Chilean Northern 5 per cent first debentures 48. Paraguay Central

prior debentures marked 18, and International of Central America common shares were \$15½, San Paulo Railway 3s. units changed hands around 1s. 11½d. and Mexican Central "A" bearer debentures were again quoted at 58. Midi 4 per cent sterling bonds were 80 at which the yield is 5 per cent.

Canadian Pacifics have rallied on balance from \$43 to \$44½, and the 4 per cent preference stock from 53½ to 54, while the 4 per cent debentures at 53½ compared with 53½ a week ago. White Pass shares strengthened and changed hands around \$11½.

Elsewhere, Emu Bay 4½ per cent debentures marked 41 and Midland of Western unified stock up to 11½. Nyasaland Railways shares kept at 11s. 3d. with the 3½ per cent debentures at 32. West of India Portuguese capital stock was again 12½.

Among shares of locomotive, engineering and allied companies, Gloucester Wagon 10s. shares have fallen from 8s. 9d. to 8s. following the loss for the past year's working, and the absence of a dividend, compared with 10 per cent a year ago. On the other hand, buying of Wagon Repairs 5s. shares persisted and they have advanced to 25s. 3d., which compares with 23s. 9d. a week ago. There has been a rally from 29s. 3d. to 30s. in Birmingham Wagon and Charles Roberts 5s. shares held last week's improvement to 5s. 7½d. In other directions, G. D. Peters have been dealt in up to 17s. 6d., North British Locomotive kept at 5s. and Beyer Peacock 5s. shares at 6s. 3d. compared with 6s. 4½d. a week ago. Westinghouse Brake eased further from 29s. 6d. to 29s. 3d. and now yield nearly 7½ per cent on the basis of last year's 11 per cent dividend.

Elsewhere, Broom & Wade 5s. shares strengthened to 27s. 3d. but there was a sharp decline in Tube Investments to 56s. 9d. Pressed Steel 5s. shares remained at 18s., Dowty 10s. shares firmed up to 34s. 4½d., but Leyland Motors eased 1s. 3d. to 83s. 3d. Steels rallied, and elsewhere, Guest Keen at 88s. compared with 86s. 9d. a week ago, but on balance, Vickers moved down from 29s. 6d. to 27s. 6d. and now yield more than 7 per cent. T. W. Ward at 68s. 6d. moved 1s. 6d. lower on balance and Ruston & Hornsby eased 6d. to 22s. 9d. at which the yield is 7½ per cent on last year's 9 per cent dividend. British Oxygen 5s. shares receded further to 17s. 3d. Babcock & Wilcox at 23s. 9d. were maintained on balance. Among electricals, G.E.C. eased from 26s. 3d. to 25s. 9d. and English Electric from 27s. 6d. to 27s. 3d., while A.E.I. at 30s. 3d. compared with 31s. 3d. a week ago.

## Forthcoming Meetings

Oct. 14 (Sat.). Permanent Way Institution, East Anglia Section. Signalling for Modernisation.

Oct. 16 (Mon.). Historical Model Railway Society. Midland Railway Coaching Stock.

Oct. 17 (Tue.). Institution of Railway Signal Engineers (York). "Modern trends in railway telecommunications and the educational problems involved," by Mr. S. D. Jones. 5.30 p.m. Signalling School, Toft Green, York.

Oct. 18 (Wed.). Railway Students Association. Presidential address. Mr. A. R.

Dunbar, O.B.E. 6.30 p.m. London School of Economics.

Oct. 18 (Wed.). The Railway Enthusiasts' Club. Demonstration of various stages in the preparation of railway coats of arms, Mr. R. E. Vincent, 7.45 p.m. 30, Wandsworth Road, S.W.8.

Oct. 19 (Thur.). British Railways (W.R.), London Lecture & Debating Society. "The changing pattern of running and maintenance under modernisation," by Mr. H. White. 5.45 p.m., Paddington.

Oct. 19 (Thur.). Diesel Engineers & Users Association. A.G.M. Symposium: "Reclaiming worn or damaged parts of diesel engines." 2.15 p.m. 76 Mark Lane, E.C.3.

Oct. 21 (Sat.). Institution of Railway Signal Engineers (Bristol). Visit to Newport signalling installation.

Oct. 23 (Mon.). Permanent Way Institution. "Reconstruction works at Farringdon," by Mr. E. F. Glover, L.T.E. 6.30 p.m. 222 Marylebone Road, N.W.1.

Oct. 24 (Tue.). Institution of Locomotive Engineers. "Control of diesel-electric locomotives," by Mr. O. Schlaepfer. 5.30 p.m. 1, Birdcage Walk, S.W.1.

Oct. 25 (Wed.). Institution of Locomotive Engineers. Visit to Bristol Siddeley Engines Limited, Ansty.

Oct. 25 (Wed.). Peterborough Railway Discussion Group. Research & Development (Carriage & Wagon), by Mr. C. F. Rose, B.T.C. 6.45 p.m., Eastfield Road.

Feb. 23, 1962 (Fri.). Royal Engineers Army Emergency Reserve (Transportation). Annual Dinner, Cafe Royal, Regent Street.

## OFFICIAL NOTICES

**PERSONAL COLUMN LTD.** Falcon House, Burnley, Lancs. Pen Friend—all hobbies. Correspondents in almost every country. All ages. S.A.E. for details.

### NEW ZEALAND GOVERNMENT RAILWAYS DEPARTMENT

TENDERS are invited by the Railways Department of the New Zealand Government for the manufacture and supply of 200 Steel Box Wagons (Kp Type) 3 ft. 6 in. gauge.

Tenders are due close in New Zealand on November 22, 1961.

Application for tender documents should be made in writing to:—

The Chief Purchasing Officer,  
New Zealand Government Offices (C/F. 99/3348),  
Adelphi Building,  
John Adam Street,  
London, W.C.2.

Specifications and Conditions of tender will be supplied free, but a charge of £50 Sterling (non-refundable) will be made for a complete set of drawings.

### WORKS MANAGER

REQUIRED by the SIERRA LEONE GOVERNMENT RAILWAY DEPARTMENT on contract for two tours of 15-18 months in the first instance. Gratuity 15% total salary drawn. Outfit Allowance £60. Children's allowances £48-£96 a year per child up to maximum of three. Free passages. Liberal leave up to full salary.

Commencing salary (including Inducement Pay) £2,060 in scale rising to £2,192 a year.

Candidates, not less than 40 should have served an apprenticeship or pupillage in Mechanical Engineering in the Workshops and Drawing Office of a Home Railway or a Locomotive building firm of repute. They should have had at least 15 years' subsequent workshop experience on a Home Railway or Overseas Railway including at least 2 years in an administrative capacity. They should have good organising ability and be fully conversant with modern practice and progressive systems of repair work of steam and diesel locomotives and carriages and wagon. Membership of the L.M.E. or L.Loc.R. an advantage.

Apply Crown Agents, 4, Millbank, London, S.W.1, for application form and further particulars, stating age, name, brief details of qualifications and experience quoting M2A/51339/RA.



3 RATINGS, 3 LENGTHS, 3 FIXINGS, 3 BEAMS . . . make these efficient, low-cost units today's most versatile heat source. Fine reflectors and many ingenious fittings 'beam' the heat where you want it . . . when you want it . . . for a one-bench installation or half-a-mile of

factory floor. No waste here in heating unoccupied areas! Robust construction combines with 'slimline' design . . . first-class workmanship combines with competitive prices. Stock, specify, use or sell these versatile units for yourself.

*Non-corrodible extruded aluminium body. Anodised mirror finish parabolic reflector.*

*Robust long-life Inconel metal sheathed elements.*

*A unique feature is the ability to angle the heater from flexible suspension.*



# 3

**LOADINGS:**  
1 kW, 2 kW, 3 kW

**LENGTHS:**  
3 ft 3 in, 5 ft 10 in, 8 ft 6 in

# 3

**FIXINGS:**  
Angle-bracket. Conduit. Chains.

**BEAMS:**  
Standard. Double-width.  
Double intensity.

**-AND ECONOMICAL TOO!** Prices £4.8.0: £6.16.0: £8.4.0: guard extra in each case

*For price leaflet and technical literature on planning an installation contact your nearest AEI office or the address below*



**Associated Electrical Industries Ltd**

HEATING AND WELDING DEPARTMENT

TRANSFORMER DIVISION

TRAFFORD PARK, MANCHESTER, 17

L1007

“

... and, of course, structural steelwork by

# WRIGHT ANDERSON™

The modern Steel-framed building has now become a more profitable and economical investment than ever—and when building in steel is the project, Wright Anderson are the people to consult.

Wright Anderson facilities and wide experience are at your service right from the drawing board stage—a discussion with their consultants is always time well spent.

**WRIGHT ANDERSON & CO LTD  
CONSTRUCTIONAL ENGINEERS & BRIDGE BUILDERS**

G.P.O. Box 2, Gateshead, Co. Durham • Tel: Gateshead 73671 (4 lines)

Grams: "Construct Gateshead"

LONDON OFFICE: 4 St. Georges Street, London, W.1. • Tel: MAYfair 2394

Contractors to H.M. Government Departments • Central Electricity Authority • National Coal Board  
Atomic Energy Authority and Crown Agents for Overseas Governments and Administrations

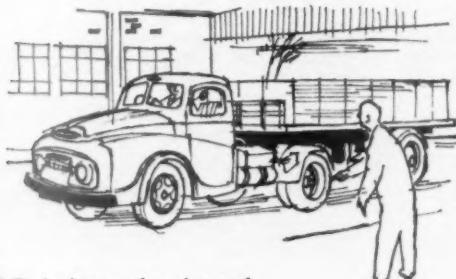


P4121

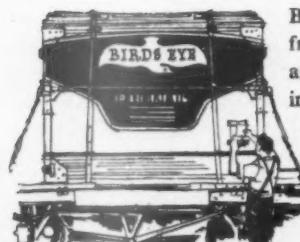
# UNILEVER COMPANIES use BRITISH RAILWAYS Modern Freight Services

Unilever Companies transport many tons of their raw materials and finished products with the help of British Railways. There are more than 800 Express Freight trains time-tabled every weekday, many giving next morning arrivals over long distances. From many towns British Railways

Export Express services give assured next-morning delivery for wagon-load traffic to London Docks (Royal, India & Millwall Groups), Merseyside, Manchester, Goole, Grimsby, Hull, Glasgow, Grangemouth & Southampton. Charges are fully competitive: ask your local Goods Agent for details.

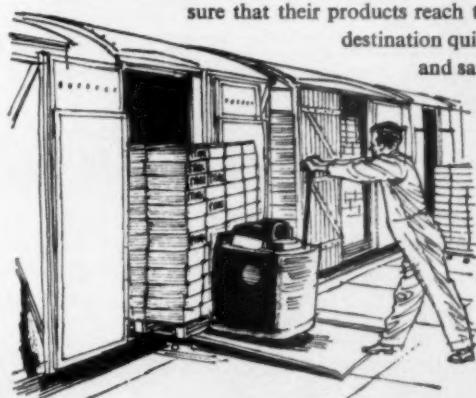


S.P.D. is the warehousing and distributing associate of Unilever Ltd. Many of its depots are connected with rail sidings and take delivery direct from British Railways pallet vans.

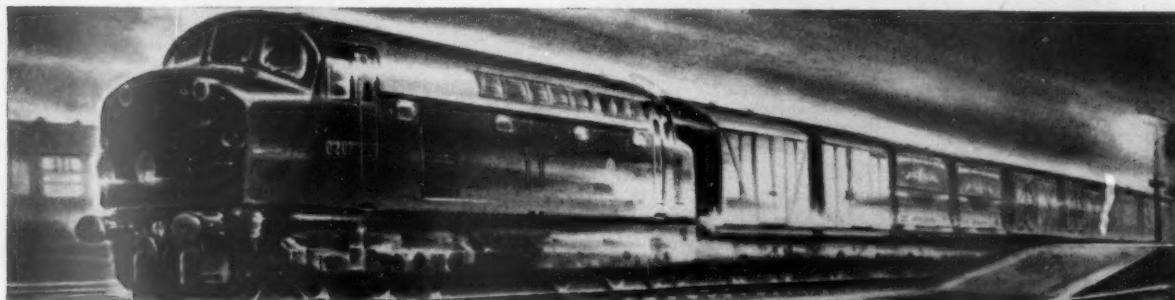


Birds-Eye Foods Ltd. quick-freeze a variety of foods which are carried across the country in British Railways refrigerated containers specially designed for the purpose, ensuring that the foods are kept in perfect condition.

Van den Berghs & Jurgens Limited make a wide variety of margarines and cooking fats which are delivered by British Railways pallet vans to S.P.D. depots throughout the country. By using British Railways, Van den Berghs & Jurgens Limited, like other Unilever Companies, ensure that their products reach their destination quickly and safely.



BRITISH RAILWAYS



# On the right lines...

with B.E.N. equipment  
for a better-quicker  
—lower cost job

B.E.N. Air Compressors and Vacuum Pumps  
for all Railway Maintenance Work.

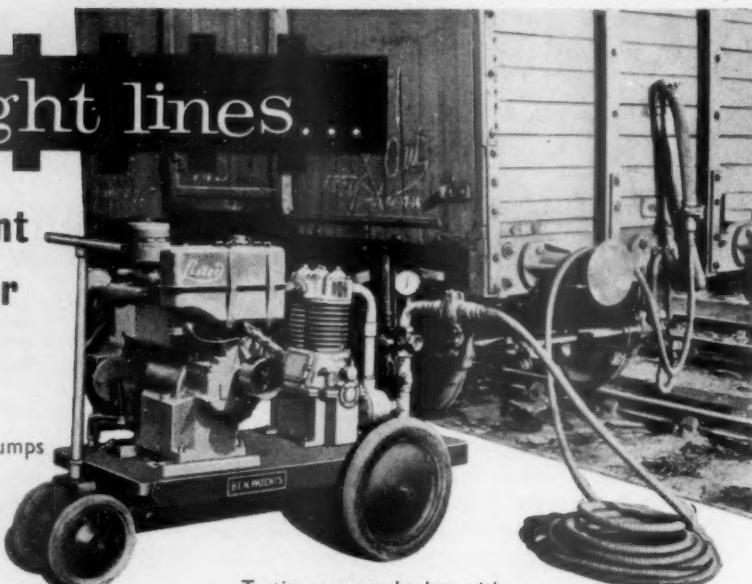
Portable Air Compressor Units from  
2 c.f.m. to 52 c.f.m.

Portable Vacuum Pump Units from  
2.5 c.f.m. to 41.4 c.f.m.

Full range of spray painting equipment,  
pneumatic tools etc.

Country-wide after-sales service.

Please write for descriptive literature.



Testing vacuum brakes with a  
B.E.N. Vacuum Pump Unit

## B·E·N

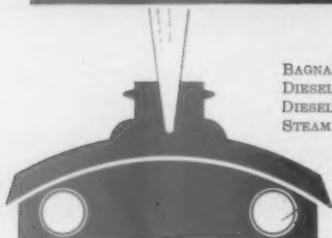
**B.E.N. PATENTS LTD.** (Division of Broom & Wade Ltd.)  
DEPT. L. HIGH WYCOMBE, BUCKS

373

## Letting off steam!



BAGNALL's Design and Build:-  
DIESEL HYDRAULIC LOCOMOTIVES,  
DIESEL MECHANICAL LOCOMOTIVES,  
STEAM LOCOMOTIVES.



... is another way of letting people know that we design and build locomotives, other than steam. Naturally, we have an established reputation for locomotive building, but we do get a bit 'hot under the collar' when we hear, "but we thought you only made steam locomotives". Here for example, is the latest BAGNALL 342 h.p. DIESEL HYDRAULIC LOCOMOTIVE, with three stage torque converter—axle-mounted, air-operated, reverse and reduction final drive unit. Weight 48 tons. An 0-6-0 wheel arrangement of 10 ft. wheelbase. Starting tractive effort in excess of 32,000 lbs. Before finalising your requirements it would pay you to consult our Technical Sales Department.

## BAGNALL

Designers and  
makers of  
Locomotives  
since 1875.

**W. G. BAGNALL LTD., Stafford, England.**  
Telephone: Stafford 51321/2  
Grams and Cables: Bagnall Stafford, England.  
London and Export Office: 1 Hay Hill, London, W.1.  
Telephone: Hyde Park 1778/9.  
Cables: Bagnaloco, London, W.1.



Eagre starts again at South Kirkby Colliery. The commencement of a further contract for The National Coal Board.  
(Photograph by courtesy of the National Coal Board)



## for a complete track service

SURVEY      DESIGN

SUPPLY      INSTALLATION

**EAGRE**

Eagre's skilful planning and practical experience on railway preparation, from earthworks to the finished job, ensures that your scheme can be well and economically laid. Railway material is supplied from Eagre's own resources. Eagre also works for British Railways, the Gas Board, the United Steel Companies, Central Electricity Authority etc. Whatever the magnitude of your siding requirements, consult —

**EAGRE CONSTRUCTION CO. LTD.**

East Common Lane, SCUNTHORPE, Lincs.

Telephone 4513 (5 lines)

E

## RAILWAY WORKSHOP MACHINERY

The illustration represents an improved type of Hydraulic Single-ended Wheel Press, for dealing with both crank and straight axles, complete with built-in electrically driven pump, continuous pressure-recording gauge, etc. When enquiring, enclose drawings showing various types of Wheels and Axles to be dealt with, also details of electrical supply available at site. We also specialise in High Pressure Hydraulic Plant for Railway Workshops.

THE RESULT OF  
OVER SEVENTY  
YEARS' EXPERI-  
ENCE ON THE  
RAILROADS OF  
THE WORLD.

We manufacture  
Hydraulic Pumps, Accu-  
mulators, Valves, Wheel Presses,  
Presses for Flanging, Forging, Spring  
Making, Plate Bending, Pipe Bending, Hydraulic  
Riveters, etc. Our Technical Department is at  
your service to help in any problem and prepare special designs.



**HENRY BERRY & CO. LTD.**  
CROYDON WORKS, LEEDS, 10

TELEPHONE: LEEDS 75481-2   GRAMS: "RIVETTER, LEEDS 10"



*For Turntables  
of all types and sizes*



## Consult Isca Foundry Co. Ltd

Designers & Manufacturers for more than a century



Other products include—Permanent Way Materials  
Railway Switches and Crossings  
Cast Iron and Pressed Steel Railway Chairs  
Junction Fishplates      Buffer Stops  
Switch Levers      General Castings

On the lists of: Admiralty, War Office, Air Ministry, Crown Agents  
and all principal Railways at Home and Abroad

Established 1857

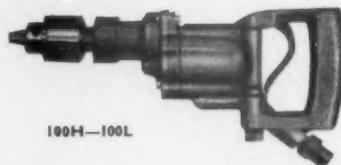
## ISCA FOUNDRY CO. LTD

RAILWAY ENGINEERS & IRONFOUNDERS

NEWPORT, MON.

Telephone: Newport 65224/5      Telegrams: Isca Newport  
London Office: 38 Victoria Street, S.W.1      Abbey 6407/8

## MACDONALD PNEUMATIC DRILLING MACHINES (LIGHT WEIGHT)



100H-100L

Automatic lubrication from an oil reservoir in the body of the tool.



100WB

Adapted for use with wire brushes

Size No.	R.P.M.	Drill	Ream	Weight, b.	Length
100H	2,200	$\frac{1}{2}$ "	$\frac{1}{4}$ "	$6\frac{1}{2}$	$12\frac{1}{2}$ "
100L	1,600	$\frac{1}{2}$ "	$\frac{1}{4}$ "	$6\frac{1}{2}$	$12\frac{1}{2}$ "
100S	700	$\frac{1}{2}$ "	$\frac{1}{4}$ "	$8\frac{1}{2}$	$13\frac{1}{2}$ "
100VVB	3,000	6"	Cupped Wire brush	8	15"

JOHN MACDONALD & CO. (PNEUMATIC TOOLS) LTD.  
POLLOKSHAWS, GLASGOW

## WEATHERPROOF METAL-CLAD SOCKETS, PLUGS, SWITCH SOCKETS etc. for all electrical purposes



## SIMMONDS & STOKES (NIPHAN) LTD

MANUFACTURING ELECTRICAL ENGINEERS

Victoria House, Southampton Row, London, W.C.1. H.O.L.born 2163, 8637



## SINGLE AND DOUBLE WEDGED KEY SPLIT BUSHES

SPE WEDGED KEY SPLIT BUSHES are manufactured as two types—the SINGLE key bush for general applications and the DOUBLE key bush—particularly suitable for use where the two ends of a long bush are required to be dead-locked in independent housings.

With both types of bush, subsequent servicing to return the bushed components to 'as new' condition is effected by fitting and keying replacement bushes of identical specification to those originally fitted. No additional machining is necessary.

### SPRING TENSION BUSHES

Manufactured in heat-treated and tempered steel for articulating and rotary applications.

Descriptive leaflet available on application.

**S P E C O M P A N Y L T D.**  
SLOUGH • BUCKS • ENGLAND

TELEPHONE: SLOUGH 23277

TELEGRAMS: PRIMING, SLOUGH



DOUGLAS.  
BECKETT, LAYCOCK & WATKINSON LTD., ACTON LANE, LONDON, N.W.10

In South America

THEY SAY 'PLATO' FOR DISH  
but

BECLAWAT FOR WINDOWS

Manufacturers of windows and sliding door gear for the World's transport. Plants in the United Kingdom, Australia, Canada, India, South Africa and Sweden.

THE  
**BECLAWAT**  
ORGANISATION

## INDEX TO ADVERTISEMENTS

Aberdare Cables, Ltd.	—	Cobra (Wood Treatment), Ltd.	—	Henjerson & Keay, Ltd.	—	Monarch Controller Co., Ltd.	—	Smith, W., Gilmour & Co., Ltd.
Abingdon King Dick, Ltd.	—	Cockerill, S.A., Ougres	—	Henschel Werke, G.m.b.H.	—	Murex Welding Processes, Ltd.	—	Southern Forge Co., Ltd.
Abus, Ltd.	—	Colvilles, Ltd.	—	Hitachi Ltd.	—	National Provincial Bank	—	South Wales Switchgear Co., Ltd.
Aircraft Marine Products (Gt. Britain), Ltd.	—	Commonwealth Sales Corporation	—	Hoffmann Manufacturing Co., Ltd.	—	Neal, R. H., & Co., Ltd.	—	S.P.E. Co., Ltd.
Alfloc Water Treatments Service	—	Consolidated Pneumatic Tool Co., Ltd.	15	Holman Bros. & Co., Ltd.	—	Newall, A. P., & Co., Ltd.	—	Spencer Moulton, George, & Co., Ltd.
Alldays & Onions, Ltd.	—	Conveyancer Fork Trucks, Ltd.	—	Howard Pneumatic Engineering Co., Ltd.	—	Newton Bros. (Derby), Ltd.	—	Standard Telephones & Cables, Ltd.
Allen, Edgar, & Co., Ltd.	—	Cooper, Geo., & Sons	—	Hudson Clarke & Co., Ltd.	—	Nife Batteries, Ltd.	—	Steel Coy. of Wales, Ltd.
Allgemeine Elektricitats Gesellschaft	—	Coventry Machine Tool Works, Ltd.	—	Hunslet Engine Co., Ltd.	—	Nippon Signal Co., Ltd.	—	Steel, Peck & Tozer
Andre Rubber Co., Ltd.	—	Cowans, Sheldon & Co., Ltd.	—	Hyde, Robert, & Son, Ltd.	—	North Bar Tool Co., Ltd.	—	Steels Engineering Products, Ltd.
Armstrong Patents Co., Ltd.	—	Cravens Bros. (Manchester), Ltd.	—	Hymatic Engineering Co., Ltd.	—	North British Locomotive Co., Ltd.	—	Stirk, John, & Sons, Ltd.
Asquith, Wm., Ltd.	—	Davey, Paxman & Co., Ltd.	—	Illingworth, E., & Co., Ltd.	—	Nuts & Bolts (Darlaston), Ltd.	—	Stone, J., & Co. (Deptford), Ltd.
Associated British Machine Tool Makers, Ltd.	32, 33	Davies & Metcalfe, Ltd.	39	Imperial Aluminium Co., Ltd.	—	Oleo Pneumatics, Ltd.	—	Stream Line Filters, Ltd.
Associated Electrical Industries-GRS, Ltd.	—	Dean, Smith & Grace, Ltd.	—	Imperial Chemical Industries, Ltd.	—	Ormerod Shapers, Ltd.	—	Suffolk Iron Foundry (1920) Ltd.
Associated Electrical Industries (Manchester), Ltd.	1, 45	Docker Brothers	—	International Twist Drill Co., Ltd.	—	Osborn, Samuel, & Co., Ltd.	—	Sulzer Bros. (London), Ltd.
Associated Electrical Industries (Rugby), Ltd.	—	Dorman Long (Africa), Ltd.	—	Iscra Foundry, Ltd.	50	Ottermill Switchgear, Ltd.	—	Summerson, Thos., & Sons, Ltd.
Associated Electrical Industries (Woolwich), Ltd.	—	Dragonair, Ltd.	—	Isothermos, Société Internationale des Applications	—	Owen & Dyson, Ltd.	—	Swiss Car and Elevator Manufacturing Corp., Ltd.
Associated Lead Manufacturers, Ltd.	—	Drewry Car Co., Ltd.	3	Jackson Vibrators, Inc.	—	P & M Co. (England), Ltd.	—	Swiss Industrial Company...
Atlas-Copco A/B	—	Drummond Asquith, Ltd.	—	Kaye, Joseph, & Sons, Ltd.	—	Palmut Co., Ltd., The	—	Swiss Locomotive & Machine Works
Auster, Ltd.	—	Du Pont (United Kingdom), Ltd.	—	Kearns, H. W., & Co., Ltd.	—	Parkinson Cowan Industrial Products, Ltd.	—	Sylglas Company, The
Austin Taylor Electrical Ltd.	—	Eagre Construction Co., Ltd.	49	Kendall & Gent, Ltd.	—	Parkinson, J., & Son (Shipley), Ltd.	—	Talbot Waggonfabrik
Automotive Products Co., Ltd.	—	Elastic Rail Spike Co., Ltd.	—	Kenitra Co., Ltd.	—	Paterson Hughes Engineering Co., Ltd.	—	Tangye, Ltd.
Bagnall, W. G., Ltd.	48	Enfield - Standard Power Cables	—	King, George, W., Ltd.	42	Pearson Machin Tool Co., Ltd.	—	Tarmac Roadstone Ltd.
Baker, John, & Bessemer, Ltd.	—	English Electric Co., Ltd.	—	Kisha Seizo Kaisha, Ltd.	—	Pel, Ltd.	38	Taylor Bros. & Co., Ltd.
Bayliss, Jones & Bayliss, Ltd.	—	English Steel Corporation, Ltd.	—	Kitchen & Wade, Ltd.	—	Permal, Ltd.	—	Taylor Bros. (Sandiacre), Ltd.
Beckett, Laycock & Watkinson, Ltd.	—	E.N.V. Engineering Co., Ltd.	—	Klockner-Humboldt-Deutz, A.G.	—	Peters, G. D., & Co., Ltd.	8	Taylor, F., & Sons (Manchester), Ltd.
Belships Co., Ltd., Skiba A/S	—	Ericssons Signalaktiebolag, L.M.	43	Kraus, Maffei A.G.	—	Philplugs, Ltd.	—	Taylor Rustless Fittings Co., Ltd.
Benjamin Electric Co., Ltd.	—	Eutectic Welding Alloys Co., Ltd.	—	Kretz, P. Ing. Dipl.	—	Plaswell Engineering Co., Ltd.	14	Tearne & Sons, Ltd.
B.E.N. Patents, Ltd.	—	Expanded Rubber Co., Ltd.	—	Krupp, Fried, Maschinenfabriken	—	Plasser Railway Machinery (G.B.), Ltd.	—	Tees Side Bridge & Engineering Works, Ltd.
Beresford, James & Son, Ltd.	—	Eyre Smelting Co., Ltd.	—	Kugelfischer Georg Schäfer & Co.	—	Plasser & Theurer	—	Telephone Manufacturing Co., Ltd.
Berry, Henry, & Co., Ltd.	—	Fairclough, Leonard, Ltd.	—	Kyosan Electric Mfg. Co., Ltd.	—	Powell Duffry Engineering Co., Ltd.	—	Tempered Rubber Components Ltd.
Beyer, Peacock, Ltd.	—	Falk, Stadelmann, & Co., Ltd.	—	Lace Web Spring Co., Ltd.	—	Preformed Line Products (Gt. Britain), Ltd.	—	Tempered Spring Co., Ltd.
Beyer, Peacock (Hymek), Ltd.	—	Fawcett Preston & Co., Ltd.	—	Lamp Manufacturing & Railway Supplies, Ltd.	—	Pressed Steel Co., Ltd.	—	Thermit Welding (Gt. Britain), Ltd.
Beyer, Peacock, Railway Equipment, Ltd.	—	Ferguson Battery Co., Ltd.	—	Lang, John, & Sons, Ltd.	—	Provident Mutual Life Assurance Association	—	Thomas, Richard, & Baldwins, Ltd.
Bintex, Ltd.	—	Ferrodo, Ltd.	—	Lamigraph Ltd.	—	Railway Signal Co., Ltd.	—	Thompson, John, Motor Pressing, Ltd.
Bindfords Industries, Ltd.	7, 22	Finlay Engineering, Ltd.	—	Lansing Bagnall, Ltd.	53	Ransomes & Rapier, Ltd.	—	Thomson, Thomas, Sons & Co. (Barrhead), Ltd.
Birkett, T. M., Billington & Newton, Ltd.	—	Flexol Engineering Co., Ltd.	—	Le Carbone (Great Britain), Ltd.	7	Rawlings Manufacturing Co., Ltd.	—	Toledo Woodhead (Sheffield), Ltd.
Birmingham Railway Carriage & Wagon Co., Ltd.	—	Fowler, John, & Co. (Leeds), Ltd.	54	Leeds Engineering & Hydraulic Co., Ltd.	—	Regent Oil Co., Ltd.	—	Town, Fredk., & Sons, Ltd.
Bolton Gate Co., Ltd.	—	French Railways	—	Levick, John, Ltd.	—	Reyrolle, A., & Co., Ltd.	—	Transport Brakes, Ltd.
Bolton, Thos., & Sons, Ltd.	—	Ganz-Mávag	36	Lifting Gear Products (Engineering), Ltd.	—	Rheinstahl Siegener Eisenbahnbedarf, A.G.	—	Transport Engineering & Equipment, Ltd.
Bonded Laminates Ltd.	—	General Electric Co., International	—	Lockheed Precision Products, Ltd.	—	Richards, Chas., & Sons, Ltd.	—	Trico-Folberth Ltd.
Booth, James, Aluminium Ltd.	—	General Electric Co., Ltd.	—	Lockspike, Ltd.	—	Roberts, Charles, & Co., Ltd.	—	Triple Safety Glass Co., Ltd.
Bowmaker (Plant), Ltd.	—	General Motors Overseas Operations	—	London Transport Executive	—	Roberts, J. W., Ltd.	—	Tulloch, Ltd.
Boydell, E., & Co., Ltd.	—	General Steel Industries Inc.	—	Luwa, G.m.b.H.	—	Rolls-Royce, Ltd.	—	Turton, Geo., Platts & Co., Ltd.
Bristol Siddeley Engines, Ltd.	—	Glacier Metal Co., Ltd.	—	Macdonald, John, & Co. (Pneumatic Tools), Ltd.	50	Rozalex, Ltd.	—	Turon, Thos., & Sons, Ltd.
Britannia Batteries, Ltd.	—	Gloucester Railway Carriage & Wagon Co., Ltd.	—	Marconi's Wireless Telegraph Co., Ltd.	20	Ruston & Hornsby, Ltd.	—	Tyler & Co., Ltd.
British Electrical Repairs, Ltd.	—	Godwin Warren (Engineering), Ltd.	—	Marcroft Wagons, Ltd.	—	United Steel Companies, Ltd.	—	Vacuum Brake Co., Ltd.
British Ermto Corp., Ltd.	—	Greenwood's & Airvac Ventilating Co., Ltd.	—	Marsden, Samuel, & Son, Ltd.	—	Vandervell Products, Ltd.	26	Vandervell Products, Ltd.
British Insulated Callender's Cables, Ltd.	—	Gresham & Craven, Ltd.	—	Marston Excelsior, Ltd.	—	Vokes, Ltd.	27	Vokes, Ltd.
British Insulated Callender's Construction Co., Ltd.	—	Griffiths Bros. & Co., Ltd. (London), Ltd.	—	Maschinenfabrik Augsburg-Nürnberg, A.G.	—	Vulcanised Fibre, Ltd.	—	Vulcanised Fibre, Ltd.
British Oxygen Co., Ltd.	—	Grover & Co., Ltd.	—	Massey, B. & S., Ltd.	—	Walker, James, & Co., Ltd.	22	Walker, James, & Co., Ltd.
British Oxygen Gases, Ltd.	—	Hackbridge & Hewittic Electric Co., Ltd.	—	Matisa Equipment, Ltd.	—	Ward, H. W., & Co., Ltd.	32	Ward, H. W., & Co., Ltd.
British Paints, Ltd.	—	Hackbridge Cable Co., Ltd.	—	Maus, J. M. J., Ltd.	—	Ward, Thos. W., Ltd.	40	Ward, Thos. W., Ltd.
British Railways	—	Hadfields, Ltd.	—	Metalastik, Ltd.	2	Werkspoor, N.V.	—	Werkspoor, N.V.
British Timken, Division of The Timken Roller Bearing Company	—	Hardy Spicer, Ltd.	—	Metallic Seamless Tube Co., Ltd.	—	Westinghouse Brake & Signal Co., Ltd.	—	Westinghouse Brake & Signal Co., Ltd.
British United Traction, Ltd.	—	Harper, John, & Co., Ltd.	—	Metropolitan-Cammell Carriage & Wagon Co., Ltd.	9	Siebe Gorman & Co., Ltd.	—	White, R., & Sons (Engineers), Ltd.
Bromsregulator Svenska Akt.	—	Harvey, G. A., & Co., Ltd. (London), Ltd.	—	Mills, The Exors. of James, Ltd.	10, 11	Siemens & Halske, Akt.	—	Wickham, D., & Co., Ltd.
Brown, David (Industries), Ltd.	—	Hasker Telegraph Works, Ltd.	—	Miner, W. H., Inc.	—	Silentbloc, Ltd.	—	Wild, A. G., & Co., Ltd.
Brush Traction, Ltd.	6	Hawker Siddeley	—	Mirlees, Bickerton & Day, Ltd.	—	Simmonds Aerocessories, Ltd.	—	Williams, Henry, Ltd.
B.T.R. Industries, Ltd.	—	Hawthorn, Leslie & Co., Ltd.	—	Mitchell, Shackleton & Co., Ltd.	—	Simmonds & Stokes (Niphon), Ltd.	50	Winn & Coles, Ltd.
Bull, John, Rubber Co., Ltd.	—	Hawthorn, Leslie & Co., Ltd.	—	Monarch Controller Co., Ltd.	—	Simon Engineering Dudley Ltd.	—	Workington Iron & Steel Co.
Bullers, Ltd.	—	Hawthorn, Leslie & Co., Ltd.	—	Monex Welding Processes, Ltd.	—	Skefko Ball Bearing Co., Ltd.	44	Wright Anderson & Co., Ltd.
Butler Machine Tool Co., Ltd.	—	Hawthorn, Leslie & Co., Ltd.	—	Neat & Co., Ltd.	—	Smith's Industrial Instruments, Ltd.	—	Wynn-Williams, Llewelyn, Ltd.
Caterpillar Tractor Co., Ltd.	17	Hawthorn, Leslie & Co., Ltd.	—	Neat & Co., Ltd.	—	Smith, John (Keighley), Ltd.	—	Zwickly, Ltd.
C.A.V., Ltd.	—	Hawthorn, Leslie & Co., Ltd.	—	Neat & Co., Ltd.	—	Smith, Thos., & Sons (Rodley), Ltd.	—	—
Chapman A. W., Ltd.	—	Hawthorn, Leslie & Co., Ltd.	—	Neat & Co., Ltd.	—	—	—	—
Chipmunk Chemical Co., Ltd.	—	Hawthorn, Leslie & Co., Ltd.	—	Neat & Co., Ltd.	—	—	—	—
Churchill Machine Tool Co., Ltd.	—	Hawthorn, Leslie & Co., Ltd.	—	Neat & Co., Ltd.	—	—	—	—
Clayton-Wright, Howard, Ltd.	—	Hawthorn, Leslie & Co., Ltd.	—	Neat & Co., Ltd.	—	—	—	—
Cleveland Bridge & Engineering Co., Ltd.	—	Hawthorn, Leslie & Co., Ltd.	—	Neat & Co., Ltd.	—	—	—	—
Clyde Rubber Works Co., Ltd.	—	Hawthorn, Leslie & Co., Ltd.	—	Neat & Co., Ltd.	—	—	—	—



1000% faster load-selection  
helps *Mirrlees* speed B. R. Dieselisation



World-famous pioneering Diesel engine builders, Mirrlees, Bickerton & Day Ltd., Stockport, are busily engaged producing 226 Diesel engines to power Locomotives for the B.R. modernisation programme.

Over 50 years young, with a modern vigorous outlook, Mirrlees chose "Mechanised Muscle" to speed handling and storage, and to utilise existing store-space to their greatest advantage.

With a discriminating use of modern, Lansing Bagnall trucks, Mirrlees . . .

- ..... Almost doubled the volume of stores in the Machine Shop Pool
- ..... Cut load-selection time from 30 mins. to 3 mins. (1000% faster)
- ..... Saved almost  $\frac{1}{2}$  of the floor space in General Stores
- ..... and cut handling labour by half.



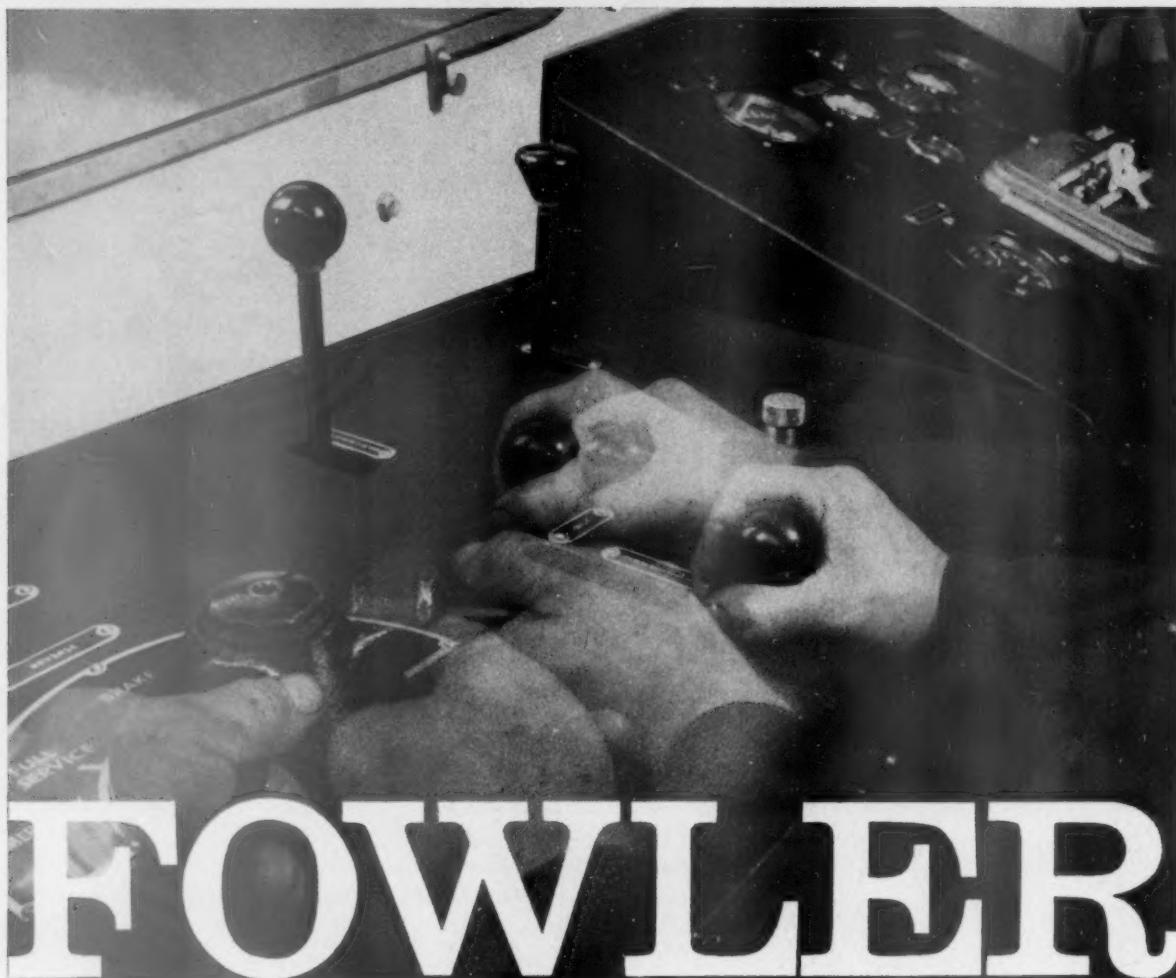
MECHANISED  
MUSCLE REGD.

**Lansing**  
**Bagnall**

BASINGSTOKE • HAMPSHIRE • ENGLAND  
TELEPHONE - - - BASINGSTOKE 1010  
TELEGRAMS - - - BAGNALLIC, BASINGSTOKE

And at: Bristol; Cardiff; Glasgow; Leeds;  
London; Solihull; Portsmouth; Warrington;  
Paris; Sydney; Toronto; New York; Cleve-  
land; Dallas, Oregon; and Zurich, and  
represented throughout the world.

SPACE MAKERS TO WORLD INDUSTRY



# FOWLER

**MEANS  
FASTER  
HANDLING**

Ketton's convinced in a week! The fuel economy, easy operation, and instant availability of a demonstration Fowler diesel shunter so impressed the Ketton Portland Cement Co Ltd that, after only one week of testing, they ordered the 176 b.h.p. production model. Soon they bought two more, and now all three haul up to 100 ton loads of limestone or clay up a 1 in 37 gradient for nine hours a day, six and a half days a week, keeping to a strict schedule, maintaining a continuous process. Maintenance is simplicity itself; reliability built-in — on Fowler shunters.  
**JOHN FOWLER & CO (LEEDS) LTD, LEEDS 10. TEL: 30731**

